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JOURNAL OF EDUCATIONAL RESEARCH

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COMMON FAULTS IN GRADUATE RESEARCH IN EDUCATION

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DURING the past decade, schools of education have greatly increased their enrollment in this country and whereas formerly only a few were undertaking graduate instruction, now there are a large number of teachers colleges and schools of education giving graduate instruction and granting graduate degrees. Usually a thesis or a dissertation is a part of the requirements for a degree, and in the last few years the amount of research as evidenced by the output of theses and dissertations has increased tremendously. Twenty years ago a doctor's dissertation in education was an outstanding event and many of them were genuine contributions to the field. In 1930, according to the Library of Congress, 127 dissertations were printed for the doctor's degree in education in American universities. Many are never printed and many of those printed are soon placed on library shelves and forgotten. It is time that we take stock of what is happening in the graduate theses in education and ask ourselves frankly whether much of the work is worthwhile.

I propose to discuss current graduate research in education under six heads: (1) that the emphasis on the gathering of facts has been poorly correlated with the application of these facts to the educational program; (2) that the background of information and understanding of the student is often meager and shallow; (3) that certain fundamental assumptions which are often tacitly understood give the research a particular bias and make it of limited value; (4) that theses sponsored by and often financed by groups or theses addressed to certain groups are often biased; (5) that choice of methods of investigation or of the instruments to be used in the investigation is often faulty, and (6) that there are a number of technical faults that are commonly seen in the statistical methods used and the preparation of the manuscript.

FACT-FINDING SURVEYS NO SUBSTITUTE FOR CONTROLLED EXPERIMENTATION

Several years ago the phrase "the scientific study of education" was widely used and there was considerable hope that by the application of scientific methods, educational practices, procedures, and policies could be put on an indisputable basis. Emphasis in the scientific method was on the gathering of facts. At that time, the school survey was having its vogue and every school survey placed considerable emphasis on the gathering of facts concerning the achievement and intelligence of the pupils, the adequacy of the school buildings, the preparation of teachers, etc. This practice of gathering facts has persisted as a shibboleth even though the value or significance of these facts has often been obscured. A typical procedure of the graduate student is as follows:

A man has taught in a normal school in the Department of Hygiene for a number of years. He has saved his money and has looked forward to doing graduate work in education with the hope of obtaining a doctor's degree. He would like to make a study of instruction in hygiene in normal schools with the hope that out of his investigation could grow standards and policies which would lead to greatly improved teaching and practices in hygiene instruction in normal schools in this country. As he outlines his work his first thought is to survey the practices in the field at the present time. He draws up a lengthy questionnaire designed to elicit facts with regard to courses, textbooks, field work and the like in hygiene. By the time the returns are in and he has done some of the tabulating, doubts creep into his mind as to the relation between these facts that he is gathering and the ideal program that he has hoped to set up and which he feels is expected of him. Practices as reported in the field fall far short of anything that is ideal. Sometimes in desperation he resorts to use of standards that have already been formulated by experts, at other times the student sets up his own program without reference to anything in particular. Other students who feel that an objective approach is required formulate an additional questionnaire blank in which teachers and officers in normal schools are asked to indicate their judgment as to what should be an ideal program in hygiene in great detail for the normal school. These judgments are then tabulated and averages are computed resulting in such recommendations as the following: personal hygiene should be given in the sophomore year, or the class in hygiene should meet three times a week, or students should be asked to read 1267 pages, all recommendations being based on averages

of the judgments which have been returned. It is evident that a survey of the present situation can never lead to the formulation of an ideal program. There are good grounds for believing that the ideal program cannot be obtained by asking workers in the field for their judgments. When a large group is thus addressed one usually obtains nothing more than a brief extension of present practice in the direction of recommendations that may have appeared in some outstanding book or periodical article or which is part of the platform of some nationally known teacher. This does not represent a fundamental validation of the proposed program in terms of its adequacy to perform its task in the best possible way.

Education is primarily an art and the science which must give aid to education must be a normative science. The logic of a normative science has not been as carefully studied as the logic of empirical science. A normative science must depend on human values for its fundamental criteria. Hence one task of the science of education is to define values. The systematic exploration of values to serve as the basis for the science of education has yet to be made, but no scientific attack on educational problems will ever make progress until these fundamental human values have been thoroughly analyzed and formulated. With a clear statement of values in view the science of education then becomes a matter of experimentation to determine what processes, activities, or procedures yield results which have already been defined as valuable. These activities or processes cannot be discovered by asking people for their judgments, because the relation between the activities and processes and their outcomes are too obscure to be known except through systematic inquiry which is the essence of the scientific method. Let me illustrate what I mean by a concrete example.

Let us suppose that we wish to formulate the characteristics of an adequate diet. Certainly this cannot be done by making a survey of what people now eat, for it is well known that the dietary practices of people are far from satisfactory. Neither can an adequate diet be determined by sending around a questionnaire to cafeteria directors or to teachers of household arts. One will only get in reply at second hand the opinion of experts who are recognized as authorities by those answering the questions. To really determine food values one must resort to experimentation. Nutritionists have used rats in order to determine the health-giving qualities of different types of food stuffs. Rats are given certain diets which differ only in one certain food element, while their differences in growth, texture of fur and the like are noted. Conclusions are then

reached with regard to food values in terms of these outcomes. The scientific method in education must resort to similar experimental attack in which, by carefully controlled experimentation, the outcomes of various activities and procedures are measured in terms of human values.

Surveys then are useful only to determine the extent to which recognized procedures are being followed and cannot be used to determine policies or programs of education. Experimentation is a tedious and difficult process. Usually experimentation, if it is to be carefully done, can answer only a very limited number of questions within a given field. The graduate student who wishes to set up a program for the teaching of hygiene in the normal school may be satisfied with getting judgments of those in the field, but such a method does not yield anything fundamental. If he wishes to get fundamental scientific answers to this problem he cannot hope to cover the whole field within the limits of a graduate thesis. We must face the alternative of permitting students to propose programs and policies in some large field of education with the express understanding that the program set up is avowedly subjective, or students must recognize that the exact and experimental approach must limit itself to some small phase of an actual situation. Many students feel that their own preparation and training is best advanced by the superficial attack of a comprehensive problem, because it gives them tangible contacts with the field. As one student said to me, "I am not going to take a problem that does not bring me into personal touch with the leaders in my field." The method of exact inquiry and experimentation, however, with the careful control of variables and the analytic and selective thinking required is generally recognized to be the best training and preparation that a student can obtain for himself even if he must be contented with a study in a somewhat limited field. So often the limited field has such ramifications that the microcosm becomes the macrocosm.

RESEARCH INVOLVES LONG AND INTENSIVE STUDY IN A FAMILIAR FIELD

My second point can be made in a much shorter time. Many students undertake a problem with inadequate background of information and understanding. In our American universities it seems as though we lack the thorough scholarship that is often claimed and found for European universities. Our students apparently first wish to propose and attack a problem and then gain their understanding of the problem and its rami-

fications as they proceed. Students, for instance, will undertake problems of legal requirements of education with only a meager acquaintance with the law; or problems on the planning and construction of school buildings or dormitories with little or no understanding of the principles of architecture or of problems with regard to pupil attitudes and interests with but limited background in psychology. We should require that students undertake problems that are related to their previous preparation. No one can do adequate thinking in a field in which he has not had thorough and fundamental training. Thinking on a problem is not something that can be undertaken in a dilettante fashion. The work for the doctor's degree should be the climax of years of study and should be the result of mature thinking in a field with which the student has had long acquaintance. Were this principle more closely adhered to, many mediocre dissertations would never have been undertaken.

Not only should there be adequate preparation in techniques and scientific background necessary for a study but any investigation is more authoritative if the individual making it has actually had experience with the field. Some of the best studies that I know have been the result of actual living and working in the field in question. *Middletown* could never have been the praiseworthy study that it is if the Lynds had not been willing to spend a year or so in residence in Middletown. A student cannot hope to pose as an authority by spending a couple of weeks surveying the financial system of a certain state or sending out questionnaires with regard to the records used in the offices of college deans when he has never been in a dean's office except on request when a college student. Instead of the questionnaire sent out to several hundred schools a personal visit to 20 or 30 selected institutions is often productive of much more insight even though the sampling is much more restricted. Somehow the student by actual visitation gets a wealth of experience that cannot possibly be obtained by tabulating questionnaire returns. I am ready to advocate the use of personal visitation as a method of research to take the place of the much abused questionnaire especially when the student has prepared a schedule of points to be noted preparatory to undertaking his visit. Finally, the dissertation should show familiarity with the literature relating to the specific problem. There is no excuse for students carrying through investigations without first informing themselves as to the methods and conclusions reached by their predecessors in the same field.

BASIC ASSUMPTIONS NEED CAREFUL SCRUTINY

3 My third point is that much of our research in education has failed to be consciously aware of certain fundamental assumptions that have been made. Much of the research in education has been done under the guidance of those whose experience has been in the fields of intelligence and achievement testing and the research has been colored by the assumptions which underlay work in this field. I can best illustrate my point by giving examples.

A number of investigations have studied the significance of class size. The traditional experimental attack is to give achievement tests of school subjects to classes which have been large and other classes which have been small and note the differences in achievement. The assumption that has been tacitly made in these studies is that all of the worthwhile values of education are contained in the results of tests of achievement. Now it is well known that there are many values for which no adequate tests have yet been devised. For instance, ability to participate in group discussion is a value whose importance is becoming increasingly felt. Has anyone made studies of the extent to which pupils tend to participate in group discussion in large classes as compared with smaller classes?

To take a second illustration, most studies of homogeneous grouping have also considered the effect of grouping on pupil achievement. There seems to have been a belief when homogeneous grouping on the basis of intelligence was advocated that such grouping would result in better school progress both for dull as well as for the bright. The results of a number of controlled studies are now available and the results do not show any uniform tendency for bright classes or dull classes to be accelerated or retarded as a result of ability grouping. Apparently grouping has little influence on school progress or achievement. Are we then on the basis of these negative findings to conclude that ability grouping does not give us what has been expected of it? Such a conclusion can be held only if one again is to assume that all values in education are contained in school progress and achievement that can be measured by tests. For instance certain attitudes of success or inferiority are also important. The extent to which these attitudes are formed by one or another scheme of pupil classification must be investigated before we should be willing to approve or condemn. One can find such unchallenged assumptions creeping into research at every turn.

Here is a study in which it was tacitly assumed that a test of dominance-submission was a measure of salesmanship. Perhaps this par-

ticular student had been so impressed by the fact that most salesmen are aggressive, dominant individuals that he had reached the conclusion that such a characteristic was necessary for a good salesman, and this generalization was accepted unchallenged and was used as the basis for an investigation.

Here is a study which attempted to determine the qualities of a good citizen by dividing 100 citizens into groups representing different levels of citizenship according to the consensus of opinion of judges and then studying the traits which these individuals possessed, by an attempt to isolate the qualities of good citizenship by contrasting these groups was made. This assumes, however, that the qualities of a good citizen are permanent. A generation ago thrift was an undisputed quality of the good citizen. Today economists are telling us that society could not maintain itself if all individuals should practice the thrift which was formerly taught as an element of the good citizen. We would be creating capital goods at a rate which would overbalance the consumption of consumer's goods. There must be some balance between saving and spending. With a rapidly changing world the description of the good citizen of today may not represent the good citizen of tomorrow.

We have allowed our students to count and check and tabulate and do the work that could be done oftentimes by an untrained clerk and have not challenged them to consider their underlying assumptions and to see the significance of the investigation which they are undertaking in its broad phases.

SUBSIDIZED RESEARCH OFTEN LEADS TO BIASED CONCLUSIONS

Another fault which is occasionally found in graduate research is the bias that comes from catering to or working for a professional group. This is most clearly seen in studies that are sponsored and financed by organizations. When the Association against the Prohibition Amendment sponsored a series of research bulletins a few years ago it was quite evident that, however honest the investigator himself was, the conclusions reached by research sponsored by such an organization would emphasize only one side of the story. In like manner, studies sponsored by correspondence schools, by electric power companies, by food corporations, by the Red Cross, by the D. A. R. and the like, must always be suspected of bias. If the investigator is being financed by some such organization no

matter how honest he can be, his results must inevitably be colored by the fact that he feels a certain responsibility to the organization that is backing his study. That the same tendency holds true with students sponsored by professional groups within education is not so generally recognized. Any professional group in education, however, has certain interests to further. It may be the sponsors of adult education; it may be the science teachers; it may be the guidance counselors, but whatever the group and however honest their motives they still have an interest in maintaining their service. This is true partly because they really believe in the value of what they are doing. It may also be true because we all tend to try to favor our own group in our own decisions. Whatever the facts, it would be most unusual to find a dissertation sponsored by some organization of mathematics teachers to recommend that mathematics be dropped from schools, or to find that the National Vocational Guidance Association should propose in a study that guidance counselors are no longer necessary. Every study sponsored by a group must almost of necessity further the interests of that group. Consequently really impartial studies must be made by individuals or groups who have an overview of the situation and who do not have the interests of any body or organization at heart.

Along with this is the dissertation addressed to a certain group with reference to the adequacy of its program. One cannot, for instance, imagine a student writing on Methodist church schools addressing his work to officers in that school with the obvious hope of obtaining a position in schools sponsored by that body who would come to the conclusion that denominational schools are not consonant with the aims of public education. Where a dissertation is obviously addressed to a certain group it must of necessity say things which are not wholly displeasing to that group. Consequently such a study cannot represent the unvarnished truth. If we want our research in education to discover for us the truth we must use extreme care in having studies sponsored by groups or addressed to groups. We have been fortunate in having so much research in education sponsored by the large impersonal foundations established by Rockefeller, Carnegie, Russell Sage and others. The investigator who works under a grant from one of these foundations feels no obligation to support any platform or organized group and consequently these investigations have been remarkably free from bias.

INADEQUATE CONCLUSIONS OFTEN RESULT FROM FAULTY METHODS AND TECHNIQUES

The fifth fault with graduate research in education is the poor choice of research methods and instruments of investigation. For instance, so many students wishing to include in the study some measure of intelligence, interest, attitude or socio-economic status will propose using some readily accessible scale or test which can be commercially purchased. Because a test is called an intelligence test or an interest questionnaire many students will accept these titles without challenge and will proceed to use these instruments and interpret the results in terms of the printed title. Often in recent work in which attitudes toward ability grouping or interests in certain types of activity are to be studied there are no instruments at present available which exactly satisfy these purposes. It is then up to the student to construct his own test or questionnaire. When the testing movement was in the pioneer stage no one hesitated to construct his own materials as part of a research project. Is it that our students are now getting lazier when they propose using the Thurstone Personality Schedule or the Strong Interest Questionnaire or because they have recently read studies in which these instruments are used and they are the first ones to come to mind? At Teachers College a number of studies of teacher personality have made use of a rating scale prepared by Jacobs. Although this rating scale was carefully constructed and is admirable in many ways, it is not better than many another that could be constructed on different principles including different traits. The student who proposes to use an already available rating scale seems to lack the ingenuity which the real investigator should have in attacking a new problem.

In research in education there is a notable tendency to follow the crowd just as there is in other types of activity. I have noted recently, for instance, that oftentimes a student will use statistics apparently for no other reason than that he has learned to compute certain constants. Very frequently one runs across a table for which both mean and median have been computed as well as both standard deviation and semi-interquartile range. There is ordinarily no good use for giving more than one measure of central tendency or more than one measure of variability, and a student's task is to decide which measure is most suitable for his purposes and use only that. Not long ago a student who discovered the value of correlations in a problem was anxious to go on and

compute partial and multiple correlations as well as the regression equation. It often seems as though students feel the necessity for putting into practice everything that they learned in the statistics course rather than making use of statistics as a tool for working up complicated data in ways that are not obviously observable.

STATISTICAL TECHNIQUES OFTEN IMPROPERLY APPLIED

My last point has to do with certain technical faults to be found in dissertations in education. I have space only to mention two or three that have been recently brought to my attention. One concerns the reporting of differences that are not reliable. I think it only human nature that a student should want to make some outstanding discovery or to prove something that is not already known and recognized. To spend a year or so in tedious drudgery on a problem only to end up with negative conclusions is at least discouraging if not indicative of poor guesswork at the beginning. As a matter of fact, to prove that relationships do not exist where they may have been suspected is as important a contribution as to discover or prove relationships, and no one should have his research rejected because he has not been able to get significant differences between groups or to get coefficients of correlations which depart in a reliable way from zero.

Students, however, feel the necessity for coming to positive conclusions and consequently will attempt to draw out of their results the differences that seem to be most outstanding and catalogue them as findings of the research. To require students to check up on these differences for their statistical reliability may seem to some to be an unnecessary step. However, it is my belief that no difference should be reported in the conclusions of a piece of research whose reliability has not been checked for statistical significance. In one study, for instance, conducted with small children the first draft of the manuscript contained the conclusion that young children show anger more often on Thursday than other days of the week. This conclusion had all the ear-marks of being a mere chance difference although someone suggested that there was a bare possibility that it was connected with the day on which the servants were out. Insignificant conclusions of this kind would not be reported with the distressing regularity that they do in our educational research if sponsors were to insist on a check of the statistical reliability of the results.

One wonders how frequently numerical errors appear in statistical computations. I am quite sure that the immense volume of statistics that

annually appears in graduate research in education is not checked over as it should be by those who are responsible for it. I am of the opinion that a clever student could manufacture out of nothing test scores, averages and standard deviations, and coefficients of correlations without having anyone check up on the accuracy of his work. We sometimes expect a good deal of our students when we require them to score hundreds of tests, tabulate hundreds of questionnaires, and carry through statistical computations with accuracy when apparently no check is made on the carefulness with which the work is done. A young instructor taking a new position in one of our universities discovered some old data which had been used to compute one of the first correlations between class marks and the results of objective tests. This single correlation coefficient has been reported many times in the literature of educational measurements and is much higher than similar coefficients which were subsequently reported. This young instructor discovered an error in the computation which made the coefficient some .3 too high. One wonders how frequently such errors creep into our research that go unchallenged. In the early days of educational research it was the practice for students to publish their raw data so that computations could be checked. Due to the bulk and expense this practice has been discontinued, but I am convinced that we are taking many things on faith in our published results which would be found in error if they could be subjected to recalculation.

Finally, the form of the manuscript as it is submitted is often unsatisfactory. There are many manuals giving standards for style for such matters as the preparation of graphs and tables and bibliographies, and students should consult these manuals and bring their manuscripts into conformity with these standards. So much research is following copy, however, that the student should be expected to understand the reason for what he does as well as to follow directions. Many bibliographies in educational research are poorly selected. They represent books and articles that the student has recently read or they do not completely cover the narrow field of investigation or they contain many titles which have only remote connection with the topic being studied. A good bibliography should be limited to the narrow field of investigation but in that field should be fairly exhaustive. More thought given to the preparation of the manuscript itself will often save a student much trouble and expense in later correction and revision.

In conclusion research is not something that can be ground out as by a machine. Educational research can never be made a mechanical process. There is no problem worthy of study that does not include unknown elements and does not require a fresh approach and attack. Too much of the research done by students in recent years has smacked of the mechanical or merely following the methods and procedures of some predecessor without clear insight into the problem itself or the methods to be used in attacking it. Much of the research in education that is being published fails to receive recognition because it lacks that spark of originality that must accompany an attack on a new problem. Research methods and techniques can be taught, but after they are mastered there is still the problem of attacking a new problem and genuine contributions to education cannot be made without the willingness to pioneer into new fields or to work out new procedures. Genuine research must be an exploration, a gamble, and every student who undertakes to do research must be of necessity taking a chance. The sure-fire problem whose end is visible from the beginning does not constitute genuine research. Any student who wishes to undertake research in education must be willing to take a venture into the unknown and only by so doing will he bring back the fruits of genuine discovery.

THE FUNCTION, VALUE, AND FUTURE OF EDUCATIONAL RESEARCH IN COLLEGES AND UNIVERSITIES*

V. A. C. HENMON
University of Wisconsin

EDUCATION as a university subject is justified primarily because scientific methods may be applied to the study of the most important social institution. Historically, it was introduced not for this reason at all but because the study of education was supposed somehow to contribute significantly to the training of teachers. Its humble, not to say illegitimate, origin and the emphasis on its secondary function has retarded rather than promoted its proper development in the university. I once urged this point of view upon a distinguished university president and he retorted that while it might be true, the regents would never have established a department of education on this basis.

Colleges and universities are in our country still the chief centers for fruitful scientific investigations in the physical, biological, and social sciences, in spite of the development of foundations and other agencies devoted to the advancement of knowledge by research. The college teacher is supposed to exercise three functions: teaching, research, and administration. Increased emphasis upon research as an obligation of the college professor is the noticeable characteristic in higher education during the past generation. The exercise of administrative functions may range all the way from the registration of an affirmative or a negative vote at a faculty meeting, which seeks to "solve" educational problems by securing a consensus of opinion, to the exalted responsibilities of a deanship or a presidency. It is interesting, then, to note that while colleges and universities are increasingly animated by a spirit of research to extend the boundaries of human knowledge, it is only rarely that they apply or even encourage the application of scientific methods to the study of their own processes. President Capen rightly observed in 1926 that "the resources of the new scientific procedures of educational inquiry have seldom been applied to it [the college]. Research in college problems has been almost wholly lacking." What has been done has been done by departments of education until very recent years, but their researches have centered largely on problems of the lower schools. It is,

* Paper presented in a symposium on educational research at the meeting of Section Q of the American Association for the Advancement of Science, Chicago, Illinois, June 29, 1933.

unfortunately, true that pressure from without, not educational research within, that produces, always grudgingly, changes in university policies and practices. Colleges and universities appear to exist to maintain the *status quo*. They pride, and even preen, themselves on their conservatism. Conservatism, not progressivism, has been for some unknown reason raised to the level of an academic virtue, nowhere better exemplified than in the solemn and usually futile or trivial deliberations of a university faculty. It is a noteworthy fact, and perhaps a sad commentary on the educational perspective of the typical college faculty, that expansions and reorganizations rarely if ever have come from its own initiative, but are the resultants of administrative fiats or responses to irresistible social pressure. If it had been left to the vote of the university faculty, many of the divisions of the modern university would never have been established. Instead of being a leader in the study of changing social conditions and demands and methods of meeting them, faculties have usually been reluctant and even ungracious followers. Each new school or college that is created in the university has undergone a long period of probation and rejection before endorsement and must survive a long period of antagonism before it is reluctantly accepted. "Cling fast to the old, the tried, and the true," is in some form a resounding slogan for university men. Men of science bulk large in a university faculty and one might expect that the spirit of experimental inquiry which animates them and which they seek to inspire in their students would lead them to apply their own methods and standards to the study of their own purposes and procedures. It is an interesting fact, however, frequently observed by students of education, that the scientific group in a faculty are the most indifferent and resistant to and hypercritical of any attempt to apply scientific method in education. Interest in research in their own fields tends to make secondary particular concern with teaching and teaching problems. *Obiter dicta*, which because of the reverence for science and research are often listened to almost with bated breath by faculties, become words of wisdom on matters educational. A distinguished chemist, however, recently stated that "the poorest teaching in our whole educational system is found in our universities, and the chemistry departments are among the greatest offenders." Perhaps as good an illustration of the non-transferability of training to be found is just this fact that sympathetic interest and support of careful, systematic and experimental inquiry is not evidenced by the group from which one might have most reason to expect it. They are as willing as any group to leave

the solution of educational problems to the consensus of judgments method which their own experimental sciences have long since outgrown. Doubtless this skeptical attitude toward experiment into such complex matters as educational objectives, curricula, and methods lies in the oft-expressed belief that there are such a large number of uncontrolled, and for that matter uncontrollable, variables in educational processes that objective evaluations or convincing experimentation are impossible. This belief harks back to the contention of John Stuart Mill that scientific experiment in the moral and social sciences is impossible. It is well expressed by Shorey who maintained that "In the physical sciences the experimental method isolates and discovers the true cause by elimination. The plurality of causes and the intermixture of effects preclude this procedure in the infinitely complex sciences of ethnology and education." The analogy between the biological sciences or medicine and education yields a more hopeful outlook for the application of experimental methods. Exactness in the control of conditions and the necessity of allowing for a considerable margin of error in results of experiments does not in these fields preclude the deriving of fruitful generalizations. If we can determine with a high or known degree of probability the effect of a remedial treatment on physical well-being, logically there is no reason why the effect of an educational treatment on mental well-being could not be experimentally determined. It devolves upon the educationist, convinced of the possibility of applying more exact methods to the really fundamental questions of education, to secure an opportunity and demonstrate convincingly that it can be done. Educational science has been slowly developing the techniques and necessary measuring devices and getting ready for really significant investigations. Curriculum and methods—what to learn and how to learn most economically and effectively—are the two problems of greatest importance and complexity. These are just the ones which have been least subjected to research and when research methods have been applied, they have usually gone to show that objectives have not been realized and methods are less effective than they are imagined to be. Negative and destructive criticism, however, which so often issues from research studies in education, should be, and, unfortunately, too often is not, the first step to a positive contribution experimentally tested, and not merely proposed as another change based on opinion and belief.

The amount of educational research is increasing with a positive acceleration and has during the last decade shifted from elementary and

secondary education to higher education. Franke and Davis'[1] analysis of changing tendencies in educational research over a period of forty years shows that during the decade from 1890-1899 there were forty-nine studies that met the criteria of research set up for inclusion while in 1920-29 there were 2000 studies, that "experimental methods are coming to be more important as devices for use in the solution of educational problems" and that while elementary and secondary education were formerly the levels of greatest attention, during the last decade higher education shows the greatest increase in research activity. Davis[2] in a recent article lists seven defects of present day research in education to which I would add at least an eighth, namely, that educational research in higher education has centered very largely on marginal or secondary problems, important to be sure, but not on fundamental ones. The outstanding feature of the past decade has been the development of personnel administration in colleges and universities. Cowley's *The Personnel Bibliographical Index,* representing an annotation and indexing of 2183 books, articles, monographs, and pamphlets, very few antedating 1920, selected from 4902 publications, is a sufficient indication of the interest in problems of higher education aside from formal instruction. The overwhelming increase in enrollments in secondary and higher schools, the multiplication of subjects in secondary schools, the declining selectivity, and the declining value of the high school certificate as a basis for admission, the indefensibly large mortality among freshmen and sophomores in college, and the economic burden of college education—all have contributed to bring to the fore the problem of improvement in methods of selection, admission, and placement of college students, educational and vocational counselling and guidance, vocational information, vocational interests and their significance, personality measurements, and the host of problems relating to the articulation between secondary and higher education, and the conditions under which college students live and move and have their being. Personnel research constitutes a very large share of the research in higher education that has accumulated. Extensive state-wide testing programs in Minnesota, Ohio, Iowa, Wisconsin, and other states have resulted; a more useful cumulative record system than we have hitherto possessed is slowly emerging, and educa-

[1] Franke, Paul R., and Davis, Robert A. "Changing Tendencies in Educational Research," *Journal of Educational Research,* XXIII (February, 1931), pp. 133-145.

[2] Davis, Robert A. "Research and the Schools," *Journal of Educational Research,* XXVI (April, 1933), pp. 561-568.

tional and vocational guidance in the secondary school are being given in the light of more accurate and dependable data. All of this is valuable, important, and necessary, but, after all, it does not touch the real heart of the problem of college education. It leaves the fundamental matters of objectives, curriculum, and methods untouched.

A second feature of educational research at the college level lies in the development of objective comparable tests. The creation of such tests is an essential precondition for the evaluation of any experiments that may be set up. Convincing evidence on many fundamental problems can not be secured without adequate measuring devices. While tests have been developed for the elementary and secondary schools in large numbers and are now administered as a matter of routine, adequate tests for the college levels have not been available. Faculties, impressed by the accumulating evidence of educational research, which shows the fallacy of measuring achievement in terms of time spent in the classroom or in terms of units or credits, have recently voted attainment, proficiency, and comprehensive examinations, but comprehensive examinations of the old or usual type that will withstand criticism as to reliability and validity have not to my knowledge seen the light of day. Departments that are critical of anything that savors of objective testing are rarely willing to submit their own examinations to critical study but are certain of their value and adequacy. This is not the time or place to rehearse the oft-repeated observations on the subjectivity, unreliability, incomparability, and invalidity of school marks and the usual type of examination except to point out that until they are replaced, the possibility of convincing experimentation on important issues is negligible. What we can measure we can begin to talk about intelligibly. The Coöperative Test Service, as an outgrowth of the Pennsylvania Study and the developments in the field of educational measurement at the elementary and secondary school levels, represents a tremendously significant undertaking. It has undertaken the great task of providing objective comparable tests in ten forms which will be useful for various practical and immediate purposes but will be especially valuable as instruments of analysis for evaluating the results of instruction and the effects of variations in methods and conditions. The College Sophomore Testing program, inaugurated last year and participated in this year by 150 colleges and universities, will give an impetus to experimentation and the construction of more adequate tests that will be invaluable. The development of objective achievement tests for the college level has been slow but in-

evitable. That they are adequate as yet no one, least of all their sponsors, would claim, but that they are better than the examinations they are designed to replace can be maintained without fear of successful contradiction. At least so much can be claimed. The great contribution to date lies in the development of adequate techniques, the setting of standards of reliability and validity, the demonstration of the inadequacy of present methods of measuring achievement, and the location of conditions that are sadly in need of investigation and correction. Progress here is slow but sure and as inevitable as the setting of the sun. When we are able to assemble a battery of achievement measures that meet reasonable standards of validity and reliability, then, and perhaps only then, will we be able to determine whether the objectives we set up for college education as a whole or for achievement in any of its subdivisions are realized or realizable, whether the curriculum content we require, recommend or merely offer contributes substantially to the realization of objectives, and whether the methods we use are as effective as they should be or might be.

The present situation in these matters is nothing short of chaos. Scarcely two institutions have the same requirements for admission and the results of numerous investigations indicate that the elaborate tables of entrance requirements with their differences do not after all matter much. No particular high school subject pattern can be shown to be better than any other, a fact which must give pause to the university man who believes that some subjects are *essential* to successful college work or at least *better* as a preparation than others which may be offered. What is done about it? A little pitiful tinkering with entrance requirements now and then, particularly in evidence now, grudgingly, as a result of pressure from below. No two institutions have the same requirements for graduation. What one requires as essential, another merely offers as an elective or does not even offer at all. Specific requirements have been gradually reduced to a minimum as a concession to individual differences in needs and capacities; meanwhile the number of courses has been increasing rapidly so that the numbers in a large university now run into the thousands, introduced because some individual or small group believes they are valuable. With the adoption of the elective system, colleges and universities went into bankruptcy so far as an educational philosophy is concerned. Instead of providing educational guidance to the college student, he must be his own guide and compass through the jungle of courses that have grown up. He is left pretty much to his own devices to build his world as best he can. The integration or unifi-

cation of his college experiences into a philosophy of life is a matter of chance. College students might very well say:

"Strange is it not that of the myriads who
Before us passed the door of darkness through
Not one returns to tell us of the way
Which to discover we must travel too."

The multiplicity of subjects in elementary and secondary schools and the competition between them for a place in the curricular sun has brought it about that each is being weighed in the balance of social and psychological utility. Moreover, each item of instruction within subjects is being scrutinized and discarded if found wanting. That college subjects have undergone this probation no one could claim. President Hadley many years ago wisely foresaw that the cost of higher education might become the problem that it now is, and that when that time came, one great source of economy would be a reduction in the mounting number of courses into which the college curriculum had been subdivided. "Lavish living," said Confucius long ago, "renders men disorderly; miserliness makes them hard. Better, however, the hard than the disorderly." Now that colleges and universities are being rudely shaken out of their complacency and serenity, perhaps the opportunity for constructive research will of necessity result concerning this central problem of college education. Kelley has pertinently observed, "I know of no phase of human life of greater import and of greater dependence upon a sound determination of future values than that of curriculum construction. The inclusion of any item in a certain curriculum is a result of the estimate of some person or some group that knowledge of it will have a value in the later lives of the pursuers of the curriculum. When we consider the importance in our lives and in those of our children of elementary, high-school and college curricula, we cannot in sense and reason turn away from this problem of future values with a sneer that it is outside the realm of science. It is certainly not outside the realm, but if it were, it would be so much the worse for science." It is inconceivable that in the long run scientific method should not be applied in the evaluation of college curricula but there is no immediate prospect that it will be done. Present discontent and unrest over college education are producing a variety of experiments, such as the Experimental College at Wisconsin, the reorganization at Chicago, the new junior college at Minnesota, the short curriculum for superior students at Buffalo, the Bennington project, and others. Objective evidence of the value of these

adventures in curriculum-making is not available nor likely to be. Whether these projects make significant and permanent contributions to college education in America or not will rest on the values placed on the judgments of their sponsors and participants and not on demonstrated outcomes. The time will surely pass, it is to be hoped, when elaborate and expensive experiments in higher education are carried on only to be found to be great successes in the judgment of their sponsors but bringing conviction to no one else. Fortunately, for those who are interested in educational research, these adventures will serve to pave the way for controlled experimentation.

Problems of method and organization loom larger in the minds of college professors than aims and curricula to judge by the recent Report of the Committee on College and University Teaching of the American Association of University Professors. If it is representative of the 12,000 professors in the membership of the Association, then the prospect for fruitful educational research is, to say the least, discouraging. While the inquiry was not an enterprise of educational research, but rather "an attempt to find what college teachers believe to be the chief hindrances to better teaching and what they regard as the most practicable means of removing these obstacles" and avowedly "with no intent to disparage research studies of the educationist type," the hostility to educationists and educational researchers, as they are frequently called, is everywhere in evidence, culminating in the extraordinary statement that "college professors will neither accept nor be guided by recommendations which they have had no part in framing." On the other hand, after reviewing in the final section experiments with new methods of instruction looking toward greater individualization of instruction, such as honors courses, independent study courses, "group major" programs, preceptorial and tutorial systems, conference plans, free periods for reading, and so forth, the committee points out that "in most instances there is no convincing way of measuring results" and hopes that "this process of experimentation may be continued, but so far as practicable under such controlled conditions as will enable their success to be determined by other than purely subjective assurances on the part of those connected with them." The "educational researcher" need not therefore be as one entirely without hope. The problems are abundant, urgent, and clearly pointed but no constructive suggestions are made for attacking them. While one major university is moving to rid itself of quiz sections as a teaching device, another major university is reaffirming its faith in their value. The

much maligned lecture system which it is just now the fashion to abuse is finding many defenders who want some convincing evidence of its supposed futility and sterility. Even the sacred laboratory method, supposedly the crowning achievement in the search for methods, so that even Latin laboratories are reported, is being critically examined on the ground that there is as Judd remarks "accumulating evidence that much time, space, and valuable apparatus have been expended in teaching students of natural sciences to dawdle." The problem of class size and the values of small sections is perennial. Five years of careful controlled or semi-controlled experimentation at the University of Minnesota, involving 108 classes under twenty-one instructors in eleven departments in four colleges, with direct man-to-man comparisons upon 1288 pairs of students, matched as to intelligence and scholarship, yielded the general result, now confirmed elsewhere, that students learn in large classes equally as well as those taught in small classes. Yet when the Commission on Higher Institutions recommended to the North Central Association last year the abandonment of its standard on class size, the Association asked that the whole problem be reconsidered in spite of the known fact that the regulation has been a dead letter for some years. The Committee on College and University Teaching is equally skeptical and conservative on this matter. It is clear that leadership from schools or departments and their bureaus of educational research will not be welcomed or accepted. The creation of a committee or division of educational research is not recommended, though in the general discussion the All University Committee on Educational Research at the University of Minnesota is commended for "many excellent studies of teaching problems." The Committee contents itself with recommending that in every university and college faculty there be a special or standing committee on the improvement of instruction. This is an ancient and familiar non-meeting, non-functioning committee in many faculties. Deference to professorial and departmental autonomy, thus, approaches its zenith and in the meantime we flit from one inconclusive experiment to another equally inconclusive. That we shall continue to do so is contradicted by what we know of the laws of fatigue and weariness.

Whether one shall be discouraged or hopeful at the prospect for educational research at the higher levels is a matter of temperament. There are grounds neither for buoyancy nor depression. When we reflect upon the extraordinary progress in educational research during the past three

decades, then our hopes cannot but run high. When we reflect upon the great complexity of problems of aims, curricula, and methods of the college, the difficulty of attacking them convincingly, except through long-time carefully planned investigations, we may feel with the Psalmist that "The days of our years are threescore years and ten; and if by reason of strength they be fourscore years, yet is their strength labour and sorrow; for it is soon cut off and we fly away."

FOR 100 PERCENT SUBTRACTION, WHAT METHOD? A NEW APPROACH

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WHY should subtraction be difficult? There are only one hundred facts to learn and they are not difficult facts. The facts run from 0-0 to 18-9. Each digit (0, 1, 2, 3, 4, 5, 6, 7, 8 and 9) is subtracted from each digit, increased by 10 when necessary. Why should these one hundred facts cause so much trouble and failure?

A coaching teacher opened the author's eyes to one of the chief troubles when he was superintendent of Schools at Connersville, Indiana, some years ago. "Take the Eighth Street Building, for example," said she.

"Miss B. teaches the little ones to say '6 take away 3, 3';

"Miss G. teaches '3 from 6, 3';

"Miss F. teaches '3 and 3 are 6, put down the 3';

"Miss H. teaches '6 is 3 and 3, put down the 3'.

"Then when borrowing facts come into the picture, there are other differences, as you know. If one method only could be agreed upon, most confusions would be avoided."

Later observation and experimentation along this line has convinced the writer that the child is entitled to one method only in subtraction, at least through grade six, and that the adoption of one method only throughout a school system will immediately improve results in subtraction.

What is the preferred method in subtraction? Can there not be agreement upon a method? If so, what method?

The chief result from earlier research and experimentation on methods of subtraction is to prove in general that no method has been satisfactory. Subtraction is a drill process; it is very simple; the only satisfactory scores are perfect scores. Therefore, McClelland's percent of errors ranging from a median of 6.7 to 9.7 is unacceptable. Beatty's[1] median accuracies of 79.3 percent and 81.7 percent are unacceptable. Osburn's[2] mean of errors ranging from 1.6 to 2.8 on twelve examples cannot be

[1] Beatty, W. W. "The Additive versus the Borrowing Method of Subtraction," *Elementary School Journal*, XXI (November, 1920), pp. 198-220.

[2] Osburn, W. J. "How Shall We Subtract?" *Journal of Educational Research*, XVI (November, 1927), pp. 237-246.

accepted as satisfactory for any of the methods of subtraction used. On the other hand, data published and unpublished, are tending to show immediate significant improvement in subtraction results when one method only is agreed upon for a school system, and that one hundred percent results are possible regardless of the method used.[3]

The earlier experimental evidence on relative values of different methods of subtraction is well summarized in the *Third Yearbook* of the Department of Superintendence, 1925, beginning on page 96; in the *Twenty-Ninth Yearbook* of the National Society for the Study of Education, 1930, beginning on page 671; and in the article by Osburn.[4] The evidence does appear to show a slight preference for take-away or subtractive methods over the additive, since the latter are frequently confused with addition. But as between upward and downward subtraction, or borrowing (decomposition) and equal additions, the data do not appear to justify any conclusions. The differences are too small. Three of Osburn's six groups contained less than one hundred pupils[5] and hence do not provide adequate bases for conclusions. In all cases the scores are unsatisfactory; no banker, for example, will accept eighty percent accuracy.

Experimenting for one hundred percent results in subtraction, and securing it under favorable conditions for a large percentage of pupils, regardless of method used, has suggested a new approach to this whole question of method in subtraction, viz., to discover for the country as a whole the *most prevalent method*. Johnson's study in 1924, indicated that 220 of 277 normal school students used the decomposition, take-away, borrowing method.[6] Osburn's study showed that decomposition, take-away, borrowing was the prevalent method in his experimental Wisconsin schools, 917 out of 1357 pupils using that method. Is there a prevalent method? Could it be made the *one and only method for the entire country* in order that the children might escape the present confusion and discouragement?

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[3] Wilson, Guy M. "New Standards in Arithmetic," *Journal of Educational Research*, XXII (December, 1930), pp. 351-360.
Wilson, Guy M. *My Subtraction Drill Book* (New York: The Macmillan Company, 1932), 48 pp.

[4] Osburn, W. J. *Op. cit.*

[5] Osburn, W. J. *Op. cit.*

[6] Johnson, J. T. "The Merits of Different Methods of Subtraction," *Journal of Educational Research*, X (November, 1924) pp. 279-290.

The present investigation, a questionnaire study, by Miss Allen[7] was undertaken under the author's direction to find out the methods of subtraction that are most common in the United States. It is based upon replies from 23 departments of education, 162 cities and 215 training schools in normal schools and teachers colleges, a total of 400 returned questionnaire. For the purposes of the questionnaire, 12 methods of subtraction were recognized. They are the combinations of complementary, borrowing and equal additions; downward and upward; additive and take-away methods. The various methods and combinations are shown in Table I, which contains also a summary of the total numbers and the percentages of use of the twelve methods of subtraction, according to the 400 returned questionnaires.

TABLE I

THE NUMBER AND THE PERCENTAGES OF USE OF EACH OF THE TWELVE METHODS OF SUBTRACTION

Reference Number	Method	No.	Percent
I a.1.	Take-away, borrowing, upward	187	48
I a.2.	Take-away, borrowing, downward	43	11
I b.1.	Take-away, equal-additions, upward	43	11
I b.2.	Take-away, equal-additions, downward	6	2
II a.1.	Additive, borrowing, upward	36	9
II a.2.	Additive, borrowing, downward	5	1
II b.1.	Additive, equal-additions, upward	56	15
II b.2.	Additive, equal-additions, downward	3	1
III a.1.	Complementary, borrowing, upward	6	2
III a.2.	Complementary, borrowing, downward	1	–
III b.1.	Complementary, equal-additions, upward	–	–
III b.2.	Complementary, equal-additions, downward	–	–
	Totals	386	100

To most readers, the items in the above table are perfectly clear. Using the example $\frac{73}{-17}$, the language for the various forms of Table I, follows:

I a1— 7 from 13; 1 from 6
I a2—13 take away 7; 6 take away 1
I b1— 7 from 13; 2 from 7
I b2—13 take away 7; 7 take away 2
II a1— 7 and 6 are 13; 1 and 5 are 6
II a2—13 are 7 and 6; 6 are 1 and 5
II b1— 7 and 6 are 13; 2 and 5 are 7
II b2—13 are 7 and 6; 7 are 2 and 5

[7] Allen, Blanche M. *Subtraction: Current Methods of Instruction in the United States.* Master's thesis. Boston: School of Education, Boston University, 1932.

III a1— 7 from 10, 3 . . . plus 3 are 6; 1 from 6
III a2—10 take away 7, 3 . . . plus 3 are 6; 6 take away 1
III b1— 7 from 10, 3 . . . plus 3 are 6; 2 from 7
III b2—10 take away 7, 3 . . . plus 3 are 6; 7 take away 2

The data given in Table I and the explanation will no doubt enable any teacher to identify her own method of subtraction, and to easily follow the discussion in this article.

TABLE II

UPWARD VS. DOWNWARD SUBTRACTION

	Upward	Downward
Take-away, borrowing	187	43
Take-away, equal additions	43	6
Additive, borrowing	36	5
Additive, equal additions	56	3
Complementary, borrowing	6	1
Complementary, equal additions	–	–
Totals	328	58

TABLE III

TAKE-AWAY VS. ADDITIVE METHOD

	Take-away	Additive
Borrowing, upward	187	36
Borrowing, downward	43	5
Equal-additions, upward	43	56
Equal-additions, downward	6	3
Totals	279	100

TABLE IV

BORROWING VS. EQUAL ADDITIONS METHOD

	Borrowing	Equal-additions
Take-away, upward	187	43
Take-away, downward	43	6
Additive, upward	36	56
Additive, downward	5	3
Complementary, upward	6	–
Complementary, downward	1	–
Totals	278	108

In brief, the above tables show, for the country as a whole, that the take-away method is used nearly three times as often as the additive; that the borrowing or decomposition form is used two and a half times as often as the equal additions; and that the upward form is used six times as often as the downward. *The take-away, borrowing, upward method, therefore, getting forty-eight percent of the total votes, is the method that should be recommended,* if present practice for the entire country is taken as a basis. No other combination receives one-third as

many votes as this combination. It would undoubtedly be of tremendous value from the standpoint of the learning of subtraction by children if this agreement could be realized for the entire country.

Some may observe that four hundred replies are not a sufficient number on which to base conclusions. There is a little more to the story than has been reported. For instance, teacher training institutions tend to use the additive method more than do city school systems. Doubtless the training schools are a little more theoretical than the city schools. If to this fact is added the further fact that the smaller towns and rural schools are less inclined to be influenced by recent tendencies, we may infer, although not supported by data in this study, that, taking the country over, the method shown prevalent in the study would be overwhelmingly prevalent if all schools were considered. At any rate every state in the Union is represented in the study and it shows internal evidence of being representative of the entire country.

It is planned to carry forward the study begun by Miss Allen until the data are reasonably complete for all parts of the country. The lead has such promise that it should be followed up. Whatever the final results, we are justified now in *recommending one method of subtraction in any school system and one method only.* This step alone will make decidedly for pupil accuracy by eliminating teacher-induced confusions.

Another immediate decision may be urged, and that is the complete abandonment of the additive method.[8] Extra confusion with addition follows the teaching of this method. Subtraction methods only should be used. There are few facts, and they are easily and quickly learned, provided drill is deferred to grade three as recommended in the Third Yearbook of the Department of Superintendence. Of course, the teaching plan must be adequate.

The downward method should also be abandoned. It is not very common (see Table II). It carries no advantages. This elimination would narrow the choice and help along toward final agreement on a single procedure in subtraction.

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[8] Beatty, W. W. *Op. cit.*

Mead, C. D., and Sears, Isabel. "Additive Subtraction and Multiplication Division Tested," *Journal of Educational Psychology*, VII (May, 1916), pp. 261-270.

Taylor, J. S. "Subtraction by the Addition Process," *Elementary School Journal*, XX (1919), pp. 203-207.

As between equal additions and borrowing, the evidence, such as it is, is slightly in favor of the former,[9] but it is confidently suggested that agreement on a single method would more than counterbalance any differences in intrinsic merit of either method. The chief end sought is the elimination of confusions, discouragement and failure among children. With good teaching, perfect scores in the fundamentals can be secured.[10] If it is possible to lift this burden of confusion, then it is a challenge to the profession to see that it is done.

Following the child's lead will mean the elimination of all features in texts and drill services which tend to distract, discourage, and defeat the child.[11] The treatment should be simple, direct, and complete in the teaching grade (grade three for subtraction). Any testing should follow the teaching plan; mixed fundamentals should be eliminated as a testing plan. Possibly more on this at another time, but it should be realized now that agreement on one method only in a school system is not enough. It should be followed by simplification and unification all along the line, in order to lead the child into an attitude of confidence and success, and perfect scores on the subtraction needed to meet the needs of adult figuring.

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[9] Ballard, P. B. "Norms of Performance in the Fundamental Processes in Arithmetic, with Suggestions for Their Improvement," *Journal of Experimental Pedagogy*, II (December, 1914), pp. 386-405; III (March, 1915), pp. 9-20.

McClelland, Wm. W. "An Experimental Study of the Different Methods of Subtraction," *Journal of Experimental Pedagogy*, IV (December, 1918), pp. 293-299.

Winch, W. H. "Equal Additions versus Decomposition in Teaching Subtraction: An Experimental Research," *Journal of Experimental Pedagogy*, V (June and December, 1920), pp. 206-220; 261-270.

[10] Wilson, Guy M. "New Standards in Arithmetic," *Journal of Educational Research*, XXII (December, 1930), pp. 351-360.

[11] Myers, Garry C., and Caroline C. "The Cost of Quick Shifting in Number Learning," *Educational Research Bulletin* (Columbus: Ohio State University, 1928), pp. 327-334.

AN ANALYSIS OF THE DRILL PROVISIONS IN DIVISION OF DECIMALS IN TEN ARITHMETIC SERIES

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THE present study was undertaken for the purpose of determining the extent of provision of abstract drill in division of decimals in ten arithmetic series, published between 1925 and 1930. A somewhat similar analysis of drill in the subtraction of fractions was reported several years ago by Brueckner.[1] Brueckner determined the amount of drill provided by ten textbooks for different types of examples in the subtraction of fractions.

Before proceeding with the purpose of determining the amount of drill provided, it was necessary to make an analysis of the four general types of examples in division of decimals, namely, (1) decimal divided by integer, (2) integer divided by integer, involving remainders, (3) decimal divided by decimal, and (4) integer divided by decimal. Such an analysis is not an easy task since we do not know what specific types of examples under each of the four general types require specific abilities. It seems reasonable to assume that some pupils would acquire skill in manipulating the decimal point after practice on only a few types of examples. The evidence which has been secured from studies of transfer of learning in arithmetic would seem to bear out this assumption.

In an experiment dealing with transfer of learning in the primary facts in addition and subtraction, Olander[2] found that a group of pupils who were taught the one hundred addition and the one hundred subtraction facts achieved no higher scores on these facts than a group of pupils who were taught only fifty-five facts in each of the processes. However, "the group which studied all the combinations attained a slightly higher proportionate score on the combinations that remained untaught in the other group." The results of Olander's experiment seem to indicate that the learning of such facts as $2 + 5$, $0 + 6$, and $7 - 3$ give a child facility with such facts as $5 + 2$, $0 + 7$ and $7 - 4$.

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[1] Brueckner, L. J. "A Technique for Analyzing the Distribution of Drill in Fractions," *Journal of Educational Method*, VII (May, 1928), pp. 352-58.

[2] Olander, Herbert T. "Transfer of Learning in Simple Addition and Subtraction," *Elementary School Journal*, XXXI (January, February, 1931), pp. 358-369; 427-437.

Another experiment dealing with transfer in the learning of number combinations has been reported by Beito and Brueckner.[3] The purpose of the study was "to determine to what extent the teaching of a fundamental number combination in the direct order transfers to the reverse order of that combination." The authors found that "the bond formed in learning the direct form of an addition combination carries over almost completely to the reverse form" and that "the amount of carry-over is influenced very little by the method of presentation." The carry-over took place in the case of pupils of different I.Q. levels.

Knight and Setzafandt[4] have reported a study of transfer in common fractions. The purpose of their study was to determine the extent to which the teaching of fractions with even denominators would carry over to fractions with odd denominators. The results showed that the group which practiced on fractions with even denominators solved almost as many exercises as the group which practiced on both even and odd denominators.

In a fourth investigation, reported by Overman,[5] the purpose "was to measure the effect of instruction given in three types of examples in two-place addition upon the pupils' ability to handle closely related types in two- and three-place addition and subtraction, and to determine whether the amount of transfer is a function of the method of teaching. More specifically the problem was to determine whether the amount of such transfer can be increased (1) by helping pupils to generalize consciously the process and formulate, from the three types taught, a general method of procedure applicable to the related types; (2) by rationalizing the process, that is, by considering the underlying principles; and (3) by combining generalization and rationalization." Each of the methods referred to was employed with a different group. The pupils of a fourth group were simply shown how to write and add the numbers in the training exercises. The results of the experiment show considerable

[3] Beito, E. A., and Brueckner, L. J. "A Measurement of Transfer in the Learning of Number Combinations," *Twenty-Ninth Yearbook* of the National Society for the Study of Education (Bloomington, Illinois: Public School Publishing Company, 1930), pp. 569-587.

[4] Knight, F. B., and Setzafandt, A. O. H. "Transfer within a Narrow Mental Function," *Elementary School Journal*, XXIV (June, 1924), pp. 780-87.

[5] Overman, J. R. "An Experimental Study of the Effect of the Method of Instruction on Transfer of Training in Arithmetic," *Elementary School Journal*, XXXI (November, 1930), pp. 183-190.

transfer for all groups. In summarizing the results of his investigation Overman states that "the effect of the instruction and practice given in certain types of examples was not confined to those types but spread to related types." He found that method was an important factor in increasing the amount of transfer. In the case of examples involving the placing of numbers having different numbers of digits, the results for the generalizing, rationalizing, and generalizing and rationalizing methods were better by 45.1 percent, 15.5 percent, and 36.9 percent, respectively, than the amount produced by the method in which the pupils were simply shown how to write and add the numbers.

All of the foregoing studies show considerable transfer of learning resulting from specific training on some facts or types of examples to other facts or types of examples without specific training on them. Further, transfer of training seems to be facilitated by generalizing or rationalizing methods. Although no studies have been made to determine the extent to which skill gained from practice on certain types of examples in division of decimals transfers to other types, it seems highly probable that such would be the case.

In the absence of definite information on the extent to which transfer of learning takes place in division of decimals, it seemed advisable to make a rather detailed analysis. Some justification for a detailed analysis is provided in the following statement by Monroe:[6]

"Even within a range of relatively simple examples it is possible to enumerate a considerable number of types. If each type of example requires a specific ability, it is clearly very important that this field of subject-matter be carefully analyzed to determine the fundamental types of examples. It is also obvious that it is extremely important that each teacher be aware of the several types of examples which exist and make certain that each pupil is trained in handling each type of example."

As a result of his experiment, Monroe concluded that the decimal point is not placed in the quotient according to any general rule or as the result of the acquisition of a general ability, but rather as the result of several specific abilities. In a recent, critical evaluation of research studies in arithmetic, Monroe and Engelhart[7] summarized the study referred to as follows:

[6] Monroe, W. S. "The Ability to Place the Decimal Point in Division," *Elementary School Journal*, XVIII (December, 1917), pp. 287-94.

[7] Monroe, W. S., and Engelhart, Max D. *A Critical Summary of Research Relating to the Teaching of Arithmetic*, University of Illinois Bulletin, XXIX, No. 5. Urbana: Bureau of Educational Research, University of Illinois, 1931.

"The conclusion which reports that the method is ineffective is based on scanty experimental evidence, but the relatively specific nature of the division abilities justifies the assumption that the conclusion is reasonably correct."

Overman[8] pointed out very definitely the need for full analysis in the following:

"The results indicate that, while transfer from one type of example to a related type may occur in large amounts and may be complete in the case of some individuals, it is seldom complete for a group as a whole. This fact means that instruction and practice in the fundamental of arithmetic must be based on full analysis of the fundamental processes. In view of the fact that transfer is seldom complete, all the essential facts and all the essential steps in the processes should be taught."

The analysis which follows may be helpful in checking or constructing drill materials. It may also be of value to teachers in diagnostic and remedial teaching.

INTEGER DIVIDED BY INTEGER, INVOLVING REMAINDERS

1. $8\overline{)\ 4}$
   (1) Integer divided by integer
   (2) Dividend not divisible by divisor
   (3) Zero annexed to dividend
   (4) Quotient a pure decimal

2. $25\overline{)\ 2}$
   (1) Integer divided by integer
   (2) Dividend not divisible by divisor
   (3) Zeros annexed to dividend
   (4) Quotient a pure decimal
   (5) Zero immediately following decimal point in quotient

3. $44\overline{)\ 110}$
   (1) Integer divided by integer
   (2) Dividend divisible by divisor
   (3) Zero annexed to dividend
   (4) Quotient a mixed decimal

DECIMAL DIVIDED BY DECIMAL

4. $.2\overline{)\ .4}$
   (1) Pure decimal divided by pure decimal
   (2) Dividend divisible by divisor
   (3) Quotient an integer

5. $.04\overline{)\ .2}$
   (1) Pure decimal divided by pure decimal
   (2) Dividend not divisible by divisor
   (3) Zero annexed to dividend
   (4) Quotient an integer

[8] Overman, *Op. cit.*

6. $.02\overline{)}.3$
(1) Pure decimal divided by pure decimal
(2) Dividend divisible by divisor
(3) Zero annexed to dividend
(4) Quotient an integer

7. $.04\overline{)}.484$
(1) Pure decimal divided by pure decimal
(2) Dividend divisible by divisor
(3) Quotient a mixed decimal

8. $.004\overline{)}.03$
(1) Pure decimal divided by pure decimal
(2) Dividend not divisible by divisor
(3) Zeros annexed to dividend
(4) Quotient a mixed decimal

9. $.04\overline{)}.06$
(1) Pure decimal divided by pure decimal
(2) Dividend divisible by divisor
(3) Zero annexed to dividend
(4) Quotient a mixed decimal

10. $.7\overline{)}.49$
(1) Pure decimal divided by pure decimal
(2) Dividend divisible by divisor
(3) Quotient a pure decimal

11. $.5\overline{)}.035$
(1) Pure decimal divided by pure decimal
(2) Dividend divisible by divisor
(3) Quotient a pure decimal
(4) Zero immediately following decimal point in quotient

12. $.5\overline{)}.046$
(1) Pure decimal divided by pure decimal
(2) Dividend divisible by divisor
(3) Zero annexed to dividend
(4) Quotient a pure decimal
(5) Zero immediately following decimal point in quotient

13. $.6\overline{)}.3$
(1) Pure decimal divided by pure decimal
(2) Dividend not divisible by divisor
(3) Zero annexed to dividend
(4) Quotient a pure decimal

14. $.5\overline{)}.01$
(1) Pure decimal divided by pure decimal
(2) Dividend not divisible by divisor
(3) Zero annexed to dividend
(4) Quotient a pure decimal
(5) Zero immediately following decimal point in quotient

15. .4) .06
(1) Pure decimal divided by pure decimal
(2) Dividend divisible by divisor
(3) Zero annexed to dividend
(4) Quotient a pure decimal

16. .2) 2.4
(1) Mixed decimal divided by pure decimal
(2) Dividend divisible by divisor
(3) Quotient an integer

17. .2) 2.04
(1) Mixed decimal divided by pure decimal
(2) Dividend divisible by divisor
(3) Quotient a mixed decimal

18. .48) 7.2
(1) Mixed decimal divided by pure decimal
(2) Dividend divisible by divisor
(3) Zero annexed to dividend
(4) Quotient an integer

19. .48) 2.4
(1) Mixed decimal divided by pure decimal
(2) Dividend not divisible by divisor
(3) Zero annexed to dividend
(4) Quotient an integer

20. .25) 2.2
(1) Mixed decimal divided by pure decimal
(2) Dividend not divisible by divisor
(3) Zeros added to dividend
(4) Quotient a mixed decimal

21. .4) 1.3
(1) Mixed decimal divided by pure decimal
(2) Dividend divisible by divisor
(3) Zeros added to dividend
(4) Quotient a mixed decimal

22. 1.5) .45
(1) Pure decimal divided by mixed decimal
(2) Dividend divisible by divisor
(3) Quotient a pure decimal

23. 3.2) .096
(1) Pure decimal divided by mixed decimal
(2) Dividend divisible by divisor
(3) Quotient a pure decimal
(4) Zero immediately following decimal point in quotient

24. 1.3) .487
(1) Pure decimal divided by mixed decimal
(2) Dividend divisible by divisor
(3) Zero annexed to dividend
(4) Quotient a pure decimal
(5) Zero immediately following decimal in point quotient

25. 1.5) .3
(1) Pure decimal divided by mixed decimal
(2) Dividend not divisible by divisor
(3) Zero annexed to dividend
(4) Quotient a pure decimal

26. 6.4) .32
(1) Pure decimal divided by mixed decimal
(2) Dividend not divisible by divisor
(3) Zero annexed to dividend
(4) Quotient a pure decimal
(5) Zero immediately following decimal point in quotient

27. 2.4) .36
(1) Pure decimal divided by mixed decimal
(2) Dividend divisible by divisor
(3) Zero annexed to dividend
(4) Quotient a pure decimal

28. 1.2) 3.6
(1) Mixed decimal divided by mixed decimal
(2) Dividend divisible by divisor
(3) Quotient an integer

29. 3.06) 15.3
(1) Mixed decimal divided by mixed decimal
(2) Dividend not divisible by divisor
(3) Zero annexed to dividend
(4) Quotient an integer

30. 1.24) 18.6
(1) Mixed decimal divided by mixed decimal
(2) Dividend divisible by divisor
(3) Zero annexed to dividend
(4) Quotient an integer

31. 1.4) 1.96
(1) Mixed decimal divided by mixed decimal
(2) Dividend divisible by divisor
(3) Quotient a mixed decimal

32. 1.25) 1.5
(1) Mixed decimal divided by mixed decimal
(2) Dividend not divisible by divisor
(3) Zeros annexed to decimal
(4) Quotient a mixed decimal

33. 2.5) 5.6
(1) Mixed decimal divided by mixed decimal
(2) Dividend divisible by divisor
(3) Zeros annexed to dividend
(4) Quotient a mixed decimal

34. 2.4) 1.44
(1) Mixed decimal divided by mixed decimal
(2) Dividend divisible by divisor
(3) Quotient a pure decimal

35. $80.8\overline{)\ 7.272}$

(1) Mixed decimal divided by mixed decimal
(2) Dividend divisible by divisor
(3) Quotient a pure decimal
(4) Zero immediately following decimal point in quotient

36. $72.4\overline{)\ 6.154}$

(1) Mixed decimal divided by mixed decimal
(2) Dividend divisible by divisor
(3) Zero annexed to dividend
(4) Quotient a pure decimal
(5) Zero immediately following decimal point in quotient

37. $2.4\overline{)\ 1.2}$

(1) Mixed decimal divided by mixed decimal
(2) Dividend not divisible by divisor
(3) Quotient a pure decimal

38. $40.2\overline{)\ 2.1}$

(1) Mixed decimal divided by mixed decimal
(2) Dividend not divisible by divisor
(3) Zeros annexed to dividend
(4) Quotient a pure decimal
(5) Zero immediately following decimal point in quotient

39. $8.6\overline{)\ 2.15}$

(1) Mixed decimal divided by mixed decimal
(2) Dividend divisible by divisor
(3) Quotient a pure decimal

40. $.4\overline{)\ 8}$

(1) Integer divided by pure decimal
(2) Dividend divisible by divisor
(3) Zero annexed to dividend
(4) Quotient an integer

41. $.2\overline{)\ 1}$

(1) Integer divided by pure decimal
(2) Dividend not divisible by divisor
(3) Zero annexed to dividend
(4) Quotient an integer

42. $.4\overline{)\ 7}$

(1) Integer divided by pure decimal
(2) Dividend divisible by divisor
(3) Zero annexed to dividend
(4) Quotient a mixed decimal

43. $.4\overline{)\ 3}$

(1) Integer divided by pure decimal
(2) Dividend not divisible by divisor
(3) Zero annexed to dividend
(4) Quotient a mixed decimal

44. 1.3) 52
(1) Integer divided by mixed decimal
(2) Dividend divisible by divisor
(3) Zero annexed to dividend
(4) Quotient an integer

45. 2.5) 5
(1) Integer divided by mixed decimal
(2) Dividend not divisible by divisor
(3) Zero annexed to dividend
(4) Quotient an integer

46. 7.7) 399
(1) Integer divided by mixed decimal
(2) Dividend divisible by divisor
(3) Zeros annexed to dividend
(4) Quotient a mixed decimal

47. 6.5) 35
(1) Integer divided by mixed decimal
(2) Dividend not divisible by divisor
(3) Zeros annexed to dividend
(4) Quotient a mixed decimal

48. 4.5) 3
(1) Integer divided by mixed decimal
(2) Dividend not divisible by divisor
(3) Zeros annexed to dividend
(4) Quotient a pure decimal

49. 30.6) 2
(1) Integer divided by mixed decimal
(2) Dividend not divisible by divisor
(3) Zeros annexed to dividend
(4) Quotient a pure decimal
(5) Zero immediately following decimal point in quotient

DECIMAL DIVIDED BY INTEGER

50. 2) .6
(1) Pure decimal fraction divided by integer
(2) Dividend divisible by divisor
(3) Quotient a pure decimal

51. 4) .24
(1) Pure decimal fraction divided by integer
(2) Dividend divisible by divisor
(3) Quotient a pure decimal
(4) Zero immediately following decimal point in quotient

52. 8) .33
(1) Pure decimal divided by integer
(2) Dividend divisible by divisor
(3) Zero annexed to dividend
(4) Quotient a pure decimal
(5) Zero immediately following decimal point in quotient

53.		(1) Pure decimal divided by integer (2) Dividend not divisible by divisor
	12) .9	(3) Zeros annexed to dividend (4) Quotient a pure decimal (5) Zero immediately following decimal point in quotient
54.		(1) Pure decimal divided by integer (2) Dividend divisible by divisor
	4) .7	(3) Zeros annexed to dividend (4) Quotient a pure decimal
55.		(1) Mixed decimal divided by integer (2) Dividend divisible by divisor
	4) 3.2	(3) Quotient a pure decimal
56.		(1) Mixed decimal divided by integer (2) Dividend divisible by divisor
	15) 1.35	(3) Quotient a pure decimal (4) Zero immediately following decimal point in quotient
57.[9]		(1) Mixed decimal divided by integer (2) Dividend divisible by divisor
	103) 6.375	(3) Quotient a pure decimal (4) Zero immediately following decimal point in quotient
58.		(1) Mixed decimal divided by integer (2) Dividend not divisible by divisor
	50) 3.5	(3) Zero annexed to dividend (4) Quotient a pure decimal (5) Zero immediately following decimal point in quotient
59.		(1) Mixed decimal divided by integer (2) Dividend divisible by divisor
	25) 4.5	(3) Zero annexed to dividend (4) Quotient a pure decimal
60.		(1) Mixed decimal divided by integer (2) Dividend divisible by divisor
	8) 57.6	(3) Quotient a mixed decimal
61.		(1) Mixed decimal divided by integer (2) Dividend divisible by divisor
	18) 47.7	(3) Zero annexed to dividend (4) Quotient a mixed decimal

[9] In a test consisting of the 61 examples, the pupils were directed to carry the quotient out to three decimal places. Hence no zero or zeros need be annexed to the dividend in example No. 57.

An objection which might be raised regarding the foregoing analysis is that some of the types of examples may not be significant from the standpoint of social utility. No data are available at the present time to indicate the relative social value of the different types. Even if such data were available other considerations would need to be taken into account in setting up a course of study in division of decimals. In discussing the theory of social utility as the sole basis of curriculum construction, Buswell[10] states that "this theory does not constitute a sufficiently broad basis to guarantee a suitable course of study. Specifically, it is urged that a tabulation of social usage will throw no light whatever on the kinds of arithmetic which *might* be useful were people sufficiently trained to use them with ease. Again, it is pointed out that solving of problems such as are encounterd in one's daily experience constitutes only one aspect of the total contribution of arithmetic and that it neglects entirely the development of abilities which may be highly valuable in quantitative thinking. . . . The limitations of the applications of their theory were so marked that its uncritical acceptance is no longer justified."

In order to determine the amount of practice which each series provides, a count was made of the occurrence of each type of example shown in the foregoing analysis. The total frequencies of occurrence of examples included in each of the four general types are presented in Table I. Table I shows considerable variation among the different series in the amount of drill which each series provides. The number of examples in which a decimal is to be divided by an integer ranges from 29 for series "G" to 477 for series "A." In the second type "integer divided by integer, the range is from 69 for series "G" to 463 for series "F." In the total provision of drill, the range is from 172 examples for series "G" to 191 for series "D." Apparently the authors of the various series differ very much in their opinions of the amount of drill necessary in the division of decimals.

On the whole there is considerable agreement among the series as to the relative emphasis to be given to the four general types. All of the series provide less practice on the type "integer divided by decimal" than on the other three types. Eight series provide less practice on the

[10] Buswell, G. T. "A Critical Survey of Previous Research in Arithmetic," *Twenty-Ninth Yearbook* of the National Society for the Study of Education (Bloomington, Illinois: Public School Publishing Company, 1930), pp. 445-470.

TABLE I

NUMBER OF TIMES EACH GENERAL TYPE OF EXAMPLE OCCURS IN TEN ARITHMETIC SERIES

General Types of Division of Decimals	Arithmetic Series*										Total
	A	B	C	D	E	F	G	H	I	J	
Decimal Divided by Integer	477	138	227	466	160	242	29	371	274	229	2613
Integer Divided by Integer involving remainders	139	262	242	267	171	463	69	267	242	258	2380
Decimal Divided by Decimal	112	131	237	121	136	153	46	191	224	198	1549
Integer Divided by Decimal	49	81	88	65	111	19	28	69	52	123	685
Total	777	612	794	919	578	877	172	898	792	808	7227

*Series I contains 4 books; series J, 5 books; other series contain 3 books.

type "decimal divided by decimal" than on the first two types. Eight series provide the greatest amount of practice on the first or the second types.

A more detailed presentation of practice provisions of the ten series of arithmetic textbooks is given in Table II. This table shows what percent of the total number of pupils worked each example incorrectly in a test made up of the sixty-one types.[11] This test was given to 278 pupils in grades 6, 7 and 8, in several public schools of Grant county, New Mexico. The examples are arranged in order of decreasing amount of error.

From the standpoint of drill provisions, it will be noticed that the different series distribute drill over many types of examples. The figures at the bottom of the table give the number of different types which are included in the practice exercises. Series "F" with 32 types provides the narrowest distribution of practice as far as types of examples are concerned. Series "C" with 51 types distributes its drill most widely. The distribution of 794 examples among 51 types is probably a better arrangement for drill purposes than the distribution of 877 examples among 32 types.

The numbers in the column farthest to the right indicate the number of arithmetic series which provide no practice on the different types. Examples '49," "38," "36," and "20" are not found in the drill exercises of nine series. Many other types of examples are neglected in more than one-half of the textbooks.

[11] Since the first book of a series is generally introduced in Grade III, the data given in Table I indicate the extent of drill provisions in division of decimals in grades III-VIII, inclusive. Most series include some simple examples in division of decimals in grades III and IV.

TABLE II

PERCENT OF PUPILS WORKING EACH EXAMPLE INCORRECTLY AND DISTRIBUTION OF PRACTICE ON EACH TYPE OF DIVISION EXAMPLE IN DECIMALS IN TEN ARITHMETIC SERIES

Example*	Percent of Pupils Working Example Incorrectly	Arithmetic Series A	B	C	D	E	F	G	H	I	J	No. of series providing no practice
46	73	3		2	3	1	3	1	6	3	3	1
47	68	1	1	1		4		3	1		4	3
49	64							1				9
48	63			1				9		1		7
38	56	2										9
40	53	33	65	37	48	59	14	1	27	18	59	0
42	51	1		2	3	4	2		5	4	21	2
44	48	6	12	13	6	10		6	21	2	10	1
43	47	1		6		3		1	5	8	4	3
12	47					1		1				8
52	46	6		6	9	3	1				6	4
53	45		2	4	6	12	5		2	8	19	2
61	45	43	41	12	79	30	52	1	51	60	26	0
24	42			1	1				1		2	6
36	42							1				9
20	40									1		9
59	38	48	27	15	36	28	15	3	27	6	29	0
39	38	2			1	3	1		4	1	2	3
26	38		2						1			8
54	37	2		1	3	1		1	2			4
57	37	14	3	6	2	5	1		1	5	7	1
3	37	45	121	62	74	42	130	16	65	66	77	0
21	36	6	1	12	8	11	12		12	84	15	1
32	35	1		2		1						7
58	35	6	1	3	6	3	3	1	20	1	17	0
33	35	17	1	9	10	13	8	1	15	29	14	0
23	35		4	6	1	1	21	1	3	1	5	0
51	35	20	21	24	22		7	4	18	14	16	1
8	34		1					1				8
56	34	14	11	6	13	3	1	2	18	5	22	0
35	32			1							1	8
27	32	1		1	1				1		1	5
17	32		1					1				8
11	31	1		1	1		4			2	1	4
45	31	2	1	4	3	7		2	2	1	8	1
18	31	16	6	39	19	7	17	5	20	5	24	0
14	31			1	4	2			2			6
9	31	1	1	1	5	2		2	1	2	1	1
16	30	6	6	23	21	29	17	1	24	15	24	0
41	29	2	2	22	2	23		4	2	9	14	1
30	29	6	1	3		3	2		6		1	3
31	28	18	11	32	6	16	29	3	27	3	28	0
7	28		4	7	3	4	4	2	5	5	6	1
37	27	1	2	4		3			2	1	2	3
60	27	187	15	75	234	67	108	10	150	137	41	0
2	27	14	9	11	23	24	34	3	10	45	38	0
15	26	9	19	46	23	23	19	6	25	57	37	0
34	25	4	1	6	5	1	1	2	3		7	1
19	24			2				2				8
13	24		1	1		2		1		1	1	4
10	24	3	18	2	2	1	3	7	6	7	7	0
29	24	1		3						1		7
25	23			1		2		1	1			6
50	22	13	1	8	3	2	8	1	5	1	2	0
6	22	1	17	1	2				1			5
4	22	5	17	5	3	1	2	6	10	4	3	0
55	21	124	16	67	53	6	36	6	81	37	44	0
22	21	1		6					1			7
5	21		4					1				8
28	20	10	13	21	5	7	13	1	20	5	17	0
1	18	80	132	169	170	105	299	50	187	137	143	0
Total number of examples		777	612	794	919	578	877	167	898	792	809	
Total number of types		43	39	51	40	43	32	41	45	39	43	

*The examples appear in the analysis. In this table the examples are referred to by their respective numbers.

Further examination of Table I reveals no tendency to distribute drill in accordance with the difficulty of examples. Percentage of error is, of course, assumed to be an index of an example's difficulty. Such examples as numbers "46," "47," "49," "48," and "38," which have a high percentage of error, receive practically no drill as compared with many less difficult types. By totaling the number of incorrect solutions for each of the four general types and dividing by the number of examples included in each type, the average number of errors for each general type was found. These averages are: (1) decimal divided by integer, 99.6; (2) integer divided by integer, involving remainders, 75.0; (3) decimal divided by decimal, 69.2; and (4) integer divided by decimal, 140.6. The most difficult general type of example, namely, integer divided by decimal, receives the least amount of practice in each textbook series. (See Table I.) Although actual life situations may disclose a greater need for the division of decimals by integers than for the division of integers by decimals, should not degree of difficulty receive greater consideration in the provision of drill than seems to have been true of the series under examination?

It has been noted that the fourth general type, namely, integer divided by decimal, has a larger average number of errors than the other general types. One would expect to find, therefore, examples of the type, integer divided by decimal, among those having the greatest percentage of error. If we consider the ten examples in Table II having the highest percentage of error (examples 46 to 12 inclusive), we find among them eight examples involving the division of an integer by a decimal. The ten examples are as follows:

(46)	$7.7\overline{)399}$	(47)	$6.5\overline{)35}$	(49)	$30.6\overline{)2}$	(48)	$4.5\overline{)3}$
(38)	$40.2\overline{)2.1}$	(40)	$.4\overline{)8}$	(42)	$.4\overline{)7}$	(44)	$1.3\overline{)52}$
(43)	$.4\overline{)3}$	(12)	$.5\overline{).046}$				

In a report of a study of difficulties in decimals, Brueckner[12] lists six examples in division which are missed most frequently.[13] Five of these examples involve the division of an integer by a decimal. Since the

[12] Brueckner, L. J. "Analysis of Difficulties in Decimals," *Elementary School Journal*, XXIX (September, 1928), pp. 32-41.

[13] In scoring the test papers errors in division were ignored. Only errors revealing ignorance of the decimal point were counted.

division of integers by decimals must indeed present a real source of difficulty for pupils, one questions both the adequacy and the distribution of drill on examples of this type. If the type is worthy of inclusion at all, then it would seem that adequate practice, sufficiently distributed, should be provided.

RESIDENCES IN 1932 OF IOWA HIGH-SCHOOL GRADUATES 1921 to 1925

HERBERT M. HAMLIN
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THE migration of high-school graduates is of interest from at least two standpoints. It conditions the manner in which the costs of education should be borne. It is an important sociological phenomenon.

A study of the changes in residence from graduation to March 1, 1932, of 5,268 Iowa high-school graduates has recently been completed at Iowa State College. More than 99 percent of the graduates, 1921 to 1925, of seven widely distributed counties were included. The counties were Cherokee, Clayton, Iowa, Mahaska, Montgomery, Tama, and Warren.[1] All of these counties are predominantly rural.

MIGRATION IN RELATION TO THE FINANCING OF SECONDARY EDUCATION

Migration outside counties.—It is usually assumed that the communities to which educated persons migrate share with the communities educating them in the benefits from their education.

It was found that only 43.2 percent of these Iowa high-school graduates were located in 1932 in the counties from whose high schools they had graduated. Thirty-one percent were living in Iowa counties other

TABLE I

RESIDENCE IN 1932 OF 5,268 GRADUATES, 1921 TO 1925, FROM THE HIGH SCHOOLS OF SEVEN IOWA COUNTIES

County	Total Graduates	Residence in 1932: County		State (outside county)		Outside State	
		No.	Percent	No.	Percent	No.	Percent
Cherokee	571	262	45.9	136	23.8	173	30.3
Clayton	784	348	44.4	282	36.0	154	19.6
Iowa	619	272	43.9	200	32.3	147	23.7
Mahaska	771	285	36.9	255	33.1	231	30.0
Montgomery	932	434	46.5	215	23.1	283	30.4
Tama	711	318	44.7	212	29.8	181	25.5
Warren	880	355	40.3	333	37.9	192	21.8
Total	5,268	2,274	43.2	1,633	31.0	1,361	25.8

[1] The investigators were Rankin E. Creel, Cherokee County; Finch I. Wagner, Clayton County; John G. Rogers, Iowa County; Omer C. Johnson, Mahaska County; Alma S. Propst, Montgomery County; Elbert A. Gump, Tama County; and Harry M. McGuire, Warren County. Their investigations are reported in separate theses available from the Iowa State College Library, Ames, Iowa.

than those in which they had secured their high-school education. There were 25.8 percent who were living outside the state of Iowa. The data by counties are presented in Table I.

Migration outside school districts.—In two counties, Mahaska and Tama, careful checks were made to determine the extent to which these high-school graduates had migrated from the school districts financing their high-school education. In Mahaska County it was found that 90 of the 771 graduates, 12.4 percent, had migrated outside their own districts but within the county, so that 74.7 percent of these graduates were living in 1932 outside the districts which had paid for their high-school education. In Tama County, 108 of 711 graduates, 15.2 percent, had migrated outside their own districts but within the county, and a total of 70.5 percent of these graduates had left the districts financing their high-school education.

Non-residents included in county groups.—In most of the counties a count was made of the persons who had lived during the high-school period outside the counties in which they had secured their high-school education. The numbers were so small as to have little effect on the general summary. In the Tama and Warren County studies all such non-residents were excluded. There were five non-residents included in the Clayton County group and two in the Iowa County group. In the Mahaska County study the few such persons included were considered to be migrants if they had left the districts in their home counties which had financed their high-school education. The other investigators report nearly negligible numbers of out-of-county students.

Relation to school finance.—It would appear from the data in Table I that the state and nation should share liberally in supporting the schools of the counties studied.

SOCIOLOGICAL ASPECTS OF MIGRATION

Farm, village, and city residents at graduation and in 1932.—An equally interesting aspect of these studies of the migration of Iowa high-school graduates is the general shift in residence from the farms and villages of these largely rural counties to the cities. In the discussions which follow, cities are considered to be centers of more than 2,500.

Table II compares the residences during the high-school period of the 5,268 persons studied with their residences in 1932. Computing from this table, it is possible to show that, although 74.6 percent of these persons lived on farms and in villages during their high-school careers, only 47.1

percent were living on farms or in villages in 1932. The percentage living in cities had increased from 25.4 percent to 52.9 percent. There was an increase of 1,448 city residents among the graduates from the high schools of seven counties.

It should be clear that these changes of residence did not all take place within the seven counties studied. The places of residence of these graduates were widely scattered, as Table I indicates.

TABLE II

RESIDENCE DURING HIGH-SCHOOL PERIOD AND IN 1932 OF 5,268 GRADUATES, 1921 TO 1925, FROM THE HIGH SCHOOLS OF SEVEN IOWA COUNTIES

Name of County	Total Graduates	Residence during High School						Residence in 1932					
		Farm		Village		City		Farm		Village		City	
		No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Cherokee	571	223	39.0	137	24.0	211	37.0	148	25.9	40	7.0	383	67.1
Clayton	784	298	38.0	486	62.0	0	0.0	200	25.5	289	36.9	295	37.6
Iowa	619	300	48.5	319	51.5	0	0.0	166	26.8	160	25.9	293	47.3
Mahaska	771	292	37.9	134	17.4	345	44.7	167	21.7	105	13.6	499	64.7
Montgomery	932	485	52.0	108	11.6	339	36.4	306	32.8	134	14.4	492	52.8
Tama	711	214	30.1	388	54.6	109	15.3	173	24.3	194	27.3	344	48.4
Warren	880	379	43.1	168	19.1	333	37.8	241	27.4	160	18.2	479	54.4
Total	5,268	2,191	41.6	1,740	33.0	1,337	25.4	1,401	26.6	1,082	20.5	2,785	52.9

Loss of farm and village children to cities.—Table III shows in a slightly different way the movements of these high-school graduates away from the farms and villages. It reveals a loss of 36.1 percent from the farm and a loss of 37.8 percent from the villages. In contrast, there was an increase of 108.3 percent in the number living in cities. It should be noted that the second count was made after there had been a considerable return of migrants to the country due to the business depression.

TABLE III

NET CHANGES IN RESIDENCE FROM GRADUATION TO 1932 OF 5,268 GRADUATES, 1921 TO 1925, FROM THE HIGH SCHOOLS OF SEVEN IOWA COUNTIES

a. Farm Residents during High-School Period

County	Number on Farms during High School	Number on Farms 1932	Gain or Loss	Percent of Gain or Loss
Cherokee	223	148	— 75	
Clayton	298	200	— 98	
Iowa	300	166	—134	
Mahaska	292	167	—125	
Montgomery	485	306	—179	
Tama	214	173	— 41	
Warren	379	241	—138	
Total	2191	1401	—790	—36.1

b. Village Residents during High-School Period

County	Number in Villages during High School	Number in Villages 1932	Gain or Loss	Percent of Gain or Loss
Cherokee	137	40	— 97	
Clayton	486	289	—197	
Iowa	319	160	—159	
Mahaska	134	105	— 29	
Montgomery	108	134	+ 26	
Tama	388	194	—194	
Warren	168	160	— 8	
Total	1740	1082	—658	—37.8

c. City Residents during High-School Period

County	Number in Cities during High School	Number in Cities 1932	Gain or Loss	Percent of Gain or Loss
Cherokee	211	383	+ 172	
Clayton	0	295	+ 295	
Iowa	0	293	+ 293	
Mahaska	345	499	+ 154	
Montgomery	339	492	+ 153	
Tama	109	344	+ 235	
Warren	333	479	+ 146	
Total	1337	2785	+1448	+108.3

Comparative percentages of migrants from farms, villages, and cities.—Table IV provides a comparison of the extent of migration in the six counties for which these data are available by persons who had lived on farms, in villages, and cities during their high-school careers. Only migration out of the county is considered.

While previous tables have shown that the migration of farm and village children to the cities has been very large, Table IV indicates that the migration of city children, apparently to other cities for the most part, takes place even more extensively. More than two-thirds of all the city children had migrated in comparison with 59.1 percent of the village children, and 48.5 percent of the farm children.

When intra-county migration is considered additionally for the two counties for which the most satisfactory data are at hand, the percentage of migrants becomes materially higher. In Tama County, 64.5 percent of the farm children, 72.7 percent of the village children, and 74.3 percent of the city children had migrated from their home districts. In Mahaska County, 77.7 percent of the farm children, 80.6 percent of the village children, and 70 percent of the city children were migrants from the districts financing their education.

Counter-migration.—No study was made of the migration of high-school graduates into the counties studied. Some inferences, however, can be drawn from the data gathered. It is clear that for the period

TABLE IV

MIGRATION FROM THEIR HOME COUNTIES OF FARM, VILLAGE AND CITY RESIDENTS WHO GRADUATED FROM THE HIGH SCHOOLS OF SIX IOWA COUNTIES, 1921 TO 1925

Name of County	Farm Residents			Village Residents			City Residents		
	No.	No. Migrants	Percent Migrants	No.	No. Migrants	Percent Migrants	No.	No. Migrants	Percent Migrants
Clayton	298	155	52.0	486	272	56.0	0	0	0
Iowa	300	145	48.3	319	202	63.3	0	0	0
Mahaska	292	168	57.5	134	89	66.4	345	230	66.7
Montgomery	485	207	42.7	108	62	57.4	339	229	67.6
Tama	214	102	47.7	388	226	58.2	109	67	61.5
Warren	379	178	48.0	168	97	57.7	333	250	75.1
Total	1,968	955	48.5	1,603	948	59.1	1,126	776	68.9

studied the trend has been from farms and villages to cities and from small cities to larger cities. There has been little migration from cities to villages and farms among the persons included in the study. Since the counties studied are largely rural with only a few small cities in them, it seems safe to conclude that the migration into these counties has not been very extensive.

CONCLUSIONS

Because of the unsettled nature of the economic situation it is impossible to draw with confidence conclusions that have general application. It is known that the stream of migration from the farms and villages to the cities is temporarily dammed. Instead, a counter-migration has set in.

One fact, however, stands out clearly. Migration has been a characteristic not of rural and village high-school graduates alone but even more of the graduates of city high schools. Whether or not cityward migration ceases, it seems reasonable to expect that migration of some sort will continue on a large scale under present and probable future conditions. It is unlikely that education will ever again be a local function in the sense that it once was; state and federal participation in the financing of education will henceforth be warranted.

EDITORIALS

"THE RISE AND FALL OF PSYCHOLOGY"

Marcus Aurelius wisely counsels: "If anything offend thee, be sure that it is not the thing itself but thine own judgment about it." Whether this be an admonition or a suggestion for further deliberation and inquiry, it, in any case, applies aptly to the writer of the sprightly and amusing article in the January *Atlantic Monthly* under the Gibbonesque title of the Rise and Fall of Psychology. Even before my copy of the magazine arrived, friends telephoned to me to learn if I had read of the sad passing of psychology; thus illustrating again the reflective wisdom of Rochefoucauld: "In the adversity of our best friends we always find something which is not wholly displeasing." I found on reading the article that the report of the untimely death of psychology was, to borrow Mark Twain's famous comment, "much exaggerated." Few psychologists would agree that psychology has risen to the heights it will some day reach or that it has fallen from its high estate and weltering in its own blood. The scientific study of human nature and human behavior is not likely to be neglected in the eternal quest for truth. These are complex matters and often elude the experimental and quantitative methods of science but that there will ever be a decline in interest in them or a relaxation of efforts to apply scientific method to their study is unthinkable.

Three pet aversions trouble this psychologist, apparently steeped in the structuralistic tradition of Titchener and the Cornell school, viz: intelligence tests, behaviorism, and psycho-analysis. These are apparently in her opinion "vain wisdom all, and false philosophy." It seems strange, and a striking commentary on the training received, that differing viewpoints and differing interests should by a trained scientist be regarded as signs of decadence rather than as evident symptoms of great vitality. That psychology during the past twenty years has been afflicted with "isms"—structuralism, functionalism, behaviorism, Gestaltism, psychoanalysis, and what not—is allowed, but this should not trouble one of a philosophic temper, for we have it on good authority that "Our light afflictions which are but for a moment work out for us a far more exceeding and eternal weight of glory."

American psychology, perhaps more than that of any other nation, is distinguished for its interest in the applications of the science in human affairs; hence it is not surprising that it should be vitally concerned with the measurement of individual differences, with the possible therapeutic applications of psychology, and with increasing the objectivity of its determinations without resort to painful and boresome introspections. To one schooled in the Titchnerian tradition, these would be interesting problems but should not be called psychology. When over half of the members of the American Psychological Association are interested in them, it seems footless to quarrel about whether they are legitimate concerns of the psychologist or not and whether they should be called psychology. To attempt to belittle the work done since Binet published his first intelligence scale, which has been found so useful, and to belittle the developments since 1905 in the applications of such measurements in educational and vocational guidance and in the study of individual differences, is to betray a myopia that is deplorable.

The only unfortunate thing is that those who have the "will to believe," and how numerous they are the psychologist well knows, will find sadistic satisfaction in this castigation of psychology. The bane of American education and American psychology is the abundance of destructive criticism and the paucity of constructive suggestions for their improvement. Of this the article, which forms the basis of this comment, is a beautiful illustration.

V. A. C. HENMON

SCIENTIFIC SUPERVISION

The purpose of this editorial is to call specific attention to the 1934 *Yearbook* of the Department of Supervisors and Directors of Instruction on "Scientific Supervision." * The Yearbook is particularly important because of its contribution to the advancement of science in a field that has been slower and more difficult than education generally to employ the methods of science. In a look into the future, the chairman of the committee in charge of the preparation of this Yearbook says:

*Rankin, Paul T. and others. "Scientific Method in Planning Supervisory Programs," *Seventh Yearbook* of the Department of Supervisors and Directors of Instruction (New York City: Bureau of Publications, Teachers College, Columbia University, 1934), 194 pp.

"The chief comment is that scientific method is not being applied as completely as possible in every phase of supervision nor in every community employing supervisors. Certain chapters, notably III, IV, VI, VIII, and IX were difficult to prepare because methods for the application of science to the functions treated are either undeveloped as yet or are used by very few supervisors. Only in the case of chapters V and VII, dealing respectively with the appraisal of instruction and curriculum studies, are scientific procedures readily available and in fairly general use. Does this mean that scientific methods cannot be applied to the other activities of supervision? The committee does not believe so, and has endeavored to find and present as comprehensively as possible the scientific ways of carrying on every major function supervisors are employed to discharge."

The materials presented in this Yearbook are organized into nine chapters as follows: (1) the scientific method; (2) the nature and function of supervision; (3) how to use the scientific method in the organization of supervision; (4) how to use the scientific method in planning the supervisory program as a whole; (5) how to use the scientific method in the appraisal of instruction; (6) how to use the scientific method in the promotion of teacher growth; (7) how to use the scientific method in curriculum studies; (8) how to use the scientific method in the preparation and installation of courses of study; and (9) how to use the scientific method in the selection and preparation of instructional materials.

The chairman of the committee in charge of the preparation of this Yearbook, in presenting it to the department, called special attention to the following distinctive and helpful features: (1) the emphasis upon the public relations aspect of supervision; (2) the emphasis upon the planning of the supervisory program; (3) the emphasis upon the use, as far as possible, of all relevant data bearing upon the problems of pupil growth; (4) certain suggestions upon the preparation and installation of courses of study; and (5) the use of science in all phases of supervision.

The purpose of supervision is defined as pupil growth through teacher growth. Since supervision deals with the whole child (and the whole teacher) supervisors must recognize and give true place to creativeness, coöperation, and democracy. There is no conflict between the concepts of creative, coöperative, democratic, and scientific supervision.

As one reads through the Yearbook he is forcefully impressed by the very considerable progress already made in the application of the methods of science to the field of supervision. In this respect there are two aspects of this advance to which the committee might have given even greater attention: (1) the development of diagnostic techniques; and (2) teacher growth through informal scientific thinking. The first furnishes a means of keeping teacher and pupil instruction close to the needs of individual teachers, pupils, and classes, and stresses group techniques such as teachers' meetings, group demonstrations, and bulletins somewhat less than does the conventional type of supervision. The second furnishes a valuable supplement to the concept of science as a body of verified knowledge by introducing the concept that good supervision is good thinking. One may thus, if he cares to do so, bring into somewhat closer proximity science and the new education.

The *Journal of Educational Research*, devoted as it is to the application of the methods of science to the problems of the field workers in education, wishes to take this opportunity to congratulate the committee and the Department of Supervisors and Directors of Instruction upon the preparation of this very excellent Yearbook.

A. S. Barr

THE NEW RESPONSIBILITY PUT UPON THE SCHOOLS AT CLEVELAND

At the Cleveland convention of the Department of Superintendence of the National Education Association, the responsibility of the American schools for their part in the recent wave of selfish speculation was accepted. The blind rush for profits regardless of any real values to the final holders of stocks, represents the actual outcome in social action of an individualistic school training. Such a school lacks a specific and organized effort to maintain the American tradition which holds that citizenship, as well as public office, is a public trust for the common welfare.

Recognizing the past deficiency, how is it to be overcome? American school men are certain of one thing. The instruction cannot be dogmatic. The superintendent of the New York City schools, H. G. Campbell, stated, in one of the principal addresses of the session, that "it is not only the *what* of the moral life we must seek; the *why* is equally important. Until youth is convinced this moral life rests upon a firm foundation, the structure elaborately raised in the school may later be shaken."

The observer recognizes that research is concerned at first, not with the "why" of a situation but with the "what." However, the values of the conduct of individuals for social ends, and the values of schooling for the uses of life are constantly bringing forward the questions of Why? How? and What for? Without a connection with these questions, research of the *what* accumulates but an unconnected succession of facts. The validity of any organization of such facts rests on some suggestion of a "why." If the organization of the facts is to be used to guide in particular situations then the questions of "how" and "what for" become important.

The study and experiment needed to meet this specific duty of education calls for an enlarged method of thinking. The underlying human energies are basic in the development of the possible outcomes of values and ends recognized as belonging to social life. Such a study is the province of an educational science concerned with validating its facts and conclusions with reference to definite changes in educational procedure. It is science used to secure, as far as possible, the attitudes and abilities found to belong to successful social conduct. Validity in thought and process is, for the educational scientist not satisfied with the situation as it is, but is determined with reference to the possibilities inherent in the sources of action, and in its control and direction for defined ends.

An organization of the school situation for a separate development of the native powers in children for social or fellowship conduct is not desirable in the public schools, were it an educational possibilty. The full problem is that of uniting the training for intellectual development with that concerned with the relation of each person to his fellows and to society as self-determined. It is difficult to conceive of the development of human society and civilization except as the result of a native urge for social organization, and equally difficult to account for civilization without an increasing use of trained intelligence in connection with this social urge. It seems probable that the teacher, to whose personal efforts was left the task of a union of social training with the intellectual, sought almost blindly a way toward this goal by the use of devices such as a socialized recitation, and of the use of numerous class activities, together with "contract" units of study, project organization of topics and other such "modern methods."

As a result of such teacher experiences the evidence is available showing how inadequate are the piecemeal experiences of complex social situ-

ations for training the youth to meet, on his own initiative, conditions too difficult for him to control without cooperative support of his fellows. The group social urge needs to be brought into play under opportunities provided for development of understanding and for trained use of social abilities, if the mind is to recognize the full meaning and opportunities in each situation.

The first need in a study of possibilities is an analyzed order of ideas, expressed by appropriate words within the pupils' vocabulary, by means of which training may follow closely the natural social needs and ability of pupils in the school situation.

To illustrate: One of the earliest requirements to realize common group ends is the individual characteristic called loyalty. Family and tribal loyalty has been required through the ages for some part of social advancement. In the modern school life, loyalty to those activities in which the school as a whole takes an interest is definitely demanded. Is loyalty not a helpful characteristic in the class work with all teachers for self-controlled union of efforts for success by all? Can not subject matter in all subjects be so organized and presented as to secure class thinking in every detail and coöperative activity to enrich mastery? Latin is one subject now so presented in the modern junior and senior high schools.

The maintained attitude of cheerfulness is another characteristic of personal relations cultivated to maintain morale under even pleasant social situations as well as under those requiring endurance of difficult conditions. It should be most helpful for success in the tasks of study and class discussions.

True courtesy, by its recognition of maintained integrity, aids to establish loyalty and cheerfulness and to secure helpful coöperation when critical discussion is required. It is particularly acceptable in the teaching situation.

It is such native powers which, when trained to act intelligently, give power for successful coöperation. Another vital power needing right development is that of courage to act in the face of difficulties when action is the needed means for social advance. The characteristic of industry needs that training which establishes responsibility for the product and determination to add an evidence of knowledge and skill as an appreciated quality. In every relationship self-control is recognized, and needs to be self-trained.

These traits, indicated by the underlined words, are personal characteristics, but they all have, for each individual, the same source of a common social urge to use life to advance social and intellectual, as well as physical well-being, for one's fellows. Untrained persons respond to particular inherited or acquired temperaments, and to fortunate or unfortunate contacts with others. Research to determine the facts as they are when traits are untrained does not reach the real problem of the educational scientist. To undertake to establish organized self-control of these powers the assumption is needed that they are human powers and can be so directed as to establish common self-developed ends for social living.

THE OBSERVER

G. A. B.

REVIEWS

Address all communications relative to book reviews to Editor Kai Jensen, University of Wisconsin, Madison, Wisconsin.

BUTTERWECK, JOSEPH S., AND SEEGERS, J. CONRAD. *An Orientation Course in Education* (Boston: Houghton Mifflin Company, 1933), pp. xij + 392.

An Orientation Course in Education.—Prior to 1910, the customary method of introducing students to the problems of teaching was through a course in the history of Education. About twenty years ago, the validity of such a first course in Education was seriously challenged. During the next decade, two new types of introductory courses developed. One type was concerned with a specific phase of Education and is illustrated by *The Teaching Process.* The second type aimed to provide a broad introduction to the problems of Education and is exemplified by the title, *Introduction to the Scientific Study of Education.* New materials for the latter type of course have been provided recently by the publication of *An Orientation Course in Education* by Butterweck and Seegers.

In planning the organization and content of this book, the authors faced two basic issues. The first was: "Should it comprise a series of chapters, each of which presents in very compact and highly simplified form a resume or abstract of a specialized phase of the educational problem . . . or should it cut across the several specialized fields of the educational problem, and introduce the students to the theories and practices of education as they have evolved from the past and as they exist today?" The authors rightly chose the latter plan in the belief that an introductory course in Education should orient the student in the larger aspects of education. The second issue was defined as follows: Should an introductory course in Education "deal primarily with organized education as it is or should its chief function be that of raising problems with which organized education is confronted?" In choosing the latter alternative, the authors recognized the need of promoting an inquiring attitude on the part of prospective teachers and of stimulating intelligent effort in the continuous task of adjusting the school to a changing social order.

The text is organized on the unit basis. Each unit is introduced by a preview preceding the more detailed discussions. The different sections of the units contain numerous questions and references which should prove of great assistance to the student as he pursues the study of problems independently. The various units are written in very simple, clear, attractive form and should be intelligible to anyone possessing the mental capacity and reading achievement assumed of all candidates for the teaching profession.

The text comprises seven units. The first, entitled "The School of Today," includes a series of brief, expository accounts concerning the length of the school session, the size of the school, the divisions of the school, the nature of the equipment, and the teaching. It pro-

vides students with a factual introduction to schools in both rural and urban centers. The second unit is concerned with "How the Schools of Today Came To Be." It includes a lengthy account of the historical and philosophical background of modern educational theory and practice. The large emphasis given to such matters before students have a relatively broad acquaintance with current practices and problems may be questioned. The third unit, entitled "Unrealized Ideals or the Schools of Tomorrow" provides brief introductions to current issues relating to the curriculum, methods of teaching, society's obligation to the individual, and the individual's obligation to society. Some sections are presented in a very concrete, illuminating manner, such as the one relating to society's obligation to the individual; others fail to give a comprehensive and unbiased view of the issues involved. For example, the section on methods of teaching assumes the validity of an activity curriculum.

The four remaining units bear the titles, "The Scientific Method in Education," "Guiding the Learner," "The Machinery of Our Schools," and "The Teacher." Whereas these chapters possess many excellent qualities, such questions as the following arise concerning their content: Is the student prepared for a relatively detailed account of the scientific method and its value before more concrete examples of its contributions have been presented? Should the psychology of learning be presented in an introductory text on Education or treated at length in a course on educational psychology? As one surveys the text as a whole, questions arise concerning the omissions of many important phases of school work such as new forms of testing and examinations, diagnosis and remedial work, extra-curriculum activities, classroom organization and management. Such statements imply that further study and evaluation is essential before agreement is reached concerning the content of greatest worth in an introductory course in Education.

The authors are to be heartily commended on the basic purpose of their text, on the clarity and simplicity of their writing, and on the specific attention given in organizing each unit to the needs of students. Much of the content should prove of great value to students in teacher training institutions. The appropriateness of other sections can be determined objectively only through their experimental use.

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VAN HOUTEN, LYMAN H. *Length of Service of Pennsylvania High School Teachers.* Contributions to Education, No. 522 (New York: Bureau of Publications, Teachers College, Columbia University, 1932), pp. ix + 147.

Reports from 16,545 high-school teachers and principals in Pennsylvania in the the year 1928-1929 were analyzed to see what factors were associated with the greatest length of teaching service. Each teacher furnished information covering his teaching service over a ten-year period. Some seven thousand furnished data regarding their social and economic status and their training. A large number of high school principals gave reasons why teachers had left schools under their supervision. With the above mentioned data relationships were studied between teaching service and district organization, sex, marital status, salary schedules, type of high school, size of high school, subjects taught in high school, social and economic status, type of training, length of training, and institutions attended.

Tenure was greatest in the largest centers of population and least in the more sparsely settled districts. Since all school districts in Pennsylvania are classified according to population as first, second, third, or fourth class districts, under a state schedule definitely relating salaries to the district classification, this increased tenure in the larger districts seemed probably due to differences in salaries paid. The assumption seemed more likely in view of the fact that within district classifications the large communities showed no greater tenure than did the small ones and by the fact that the attraction of higher salaries was reported by principals as the most potent influence in withdrawal of teachers from positions.

The median teaching experience was approximately eight years for women and seven years for men, whereas the length of service in the present position was approximately three years for women and slightly less than three years for men. Teachers of single subjects taught longer in a place than those of combinations of subjects, although there is little to indicate that the subjects or combinations were related to change since the population of the district would affect the number of teachers of single subjects. The highest service was found among junior-high school teachers and the lowest in two and three-year high schools. Unmarried women exceeded the men in length of service and married women exceeded the unmarried women. Noncollege graduates exceeded college graduates in length of service. The type of school of itself seemed to have no influence on the length of service.

Desire to live at home or to be near home seemed to influence shifts in teaching positions. The high-school principals reported that thirteen percent of the teachers who left positions did so to be at home or to get nearer home. In the smaller districts eighty-seven percent of the teachers were within ten miles of the communities in which they attended school. Of all teachers in the state, fifty-seven percent were within ten miles of their home communities and seventy-eight percent lived within sixty miles of their home communities. In all but first-class districts this desire to be in or near the community in which the teacher attended school seemed a definite factor in influencing tenure.

Other factors which seemed to be associated with increased length of teaching service were: parental incomes of one thousand dollars or less per year; increased training; home ownership (excepting in large cities); and graduation from a teachers college. Teachers who were sons or daughters of farmers had longer average tenure than did those persons in other occupations. Added training seems to be the result of longer service rather than the cause.

Estimates of the number of beginning teachers needed in Pennsylvania high schools over a twelve-year period compared with estimates of the number of new high-school teachers being prepared annually show that approximately twice as many are being trained for high-school teaching as are likely to be used. The author suggests raising standards of training and the curtailment of the output of training institutions to bring the number trained more closely to the likely demand.

This study is unusually complete in that it covers more than ninety-nine percent of the high-school teachers in Pennsylvania. It is a real addition to literature in the field of teacher-training.

EARL W. ANDERSON
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DIENST, CHARLES FRANKLIN. *The Administration of Endowments with Special Reference to the Public Schools and Institutional Trusts of Idaho.* Contributions to Education, No 560 (New York: Bureau of Publications, Teachers College, Columbia University, 1933), pp. xi + 131.

This is a report of a study of necessary changes in provision for administering the public school and institutional endowments in any state, based on a detailed summary in Idaho. Improvements in accounting are considered and restrictions on investments, as well as more certain legal guarantees for perpetuity of the trust.

The point of view advanced is that, while grants to public education resulting from the federal land grant policy represent "The finest idealism of national life and the faith of the American people in popular government," assurance for practical values must come from a more business-like organization of state agencies responsible for administering the trust. In fact, "Realization of the values in the interest of the legal beneficiaries calls for continuous scientific study of endowment problems."

The detailed report of conditions and practices in Idaho constitutes a difficulty analysis revealing glaring deficiencies in accounting, investment, and guarantees from loss. This has general significance, as it represents the cumulative experience of more than a century among states which have benefited from the land grant policy of the ordinance of 1787.

The report ought to serve as a chart for procedures of investigation in every state faced with similar problems. The principles of good administration of a public trust should be applied in every such situation.

FREDERICK L. WHITNEY
Colorado State Teachers College

RULON, PHILLIP JUSTIN. *The Sound Motion Picture in Science Teaching.* Harvard Studies in Education, Volume 20 (Cambridge: Harvard University Press, Harvard University, 1933), pp. xi + 236.

The use of visual aids in the classroom has occupied considerable space in educational literature during the past decade, and during the past five or six years numerous experiments have been performed to measure objectively the contribution of motion pictures as aids to learning. The most recently reported study is that by Phillip Justin Rulon of the Graduate School of Education of Harvard University.

Mr. Rulon and his associates, desiring to measure the contribution of the talking motion picture as an aid to learning in the field of general science, used eight sound films, six of which were produced specifically for the purpose of their study, and a textbook which also was written for this purpose. The subject matter studied, which consisted of eight units including three in physiography and five in biology, was presented to the pupils over a period of thirty school days. Three groups of pupils were used: (1) the Zero Group which received no instruction in the subject and whose average score was used in each instance as the zero score; (2) the control group whose only materials of instruction was the specially prepared textbook; (3) the experimental group which studied the eight talking motion pictures in addition to the textbook.

The tests employed were unique and probably superior to any others yet used

in visual instruction experimentation. The most rigid controls and flawless statistical technique are evident, and it would be difficult to suggest any improvement in the method of conducting the experiment.

The results all indicated a distinct gain for the film or experimental group over that of the control group. On the Immediate Tests the percentage of film instruction superiority over the non-film instruction exceeded twenty percent, while on the Retention Tests, given three months later, the film instruction superiority exceeded thirty-eight percent.

However, as this reader ponders its contribution to educational knowledge, aside from the techniques employed, he is led to regret that such an elaborate set-up and a so well nigh perfect procedure should have been used to answer a question which, after all, is of little concern to men and women in the educational field. There could be little question in the minds of present day teachers whether the bare textbook method of teaching science to children would produce satisfactory results. Any method of presenting the subject matter more concretely, whether it be by means of laboratory experimentation, lecture demonstration, field trips, or mere undirected observation, ought to produce better results in a field such as science. For a number of years excellent silent motion pictures have been produced and have been used successfully in the teaching of science and other subjects. These films employ all of the modern devices, refinements, and tricks, except sound, which are known to the motion picture industry. Their low cost and their ease and simplicity of projection has caused them to be installed and used in most modern school systems. The question which needs to be answered is not whether talking pictures are better than no visual aids at all, but whether they are superior to silent films for classroom teaching purposes. Before this question can be answered it will be necessary to learn what contribution is made by the addition of a synchronized lecture to a film over that of a silent film accompanied by the classroom teacher's comments. Except where sound is an essential element in the learning situation, the question that needs to be settled, then, is whether a fixed perfectly synchronized lecture is superior to the accompaniment of directions and questions by the classroom teacher—comments based upon the teacher's intimate knowledge of the capacities, the limitations, and the previous experience of the members of his class.

But, the author has contributed much in the line of experimental method and as such the book is a worthy contribution to the field of visual instruction research.

JOHN E. HANSEN
University of Wisconsin

SPERLE, HENRYETTA. *The Case Method Technique in Professional Training.* Contributions to Education, No. 571, (New York: Bureau of Publications, Teachers College, Columbia University, 1933), pp. vi + 92.

The reader secures from this monograph a fairly adequate review of the case method as applied to non-educational fields. The writer's treatment is less adequate for the field of education, she apparently being somewhat unaware of the interest in this problem in educational circles a decade ago.

The book gives some interesting and valuable case material from student teachers, showing the difficulties they are facing during their cadetship. All such concrete material is valuable for critic

teachers or for students in training. That such should be classified as "the case method technique in professional training" seems to the reviewer a labored use of the term. Without disparaging the many suggestive and helpful features of the book, the prospective reader must not expect to find herein an application of the case method of teaching as identical with that shown in such fields as law and medicine, nor will he find any attempted critical evaluation of philosophy of a movement which reached its zenith seemingly ten years ago under Dr. William Paxton Burris.

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HUGHES, AVAH W. *Carrying the Mail: A Second Grade's Experience* (New York: Bureau of Publications, Teachers College, Columbia University, 1933), pp. xiv + 253.

Carrying the Mail, by Avah W. Hughes, a descriptive narration of the activities and work of a second grade in the Lincoln School, Columbia University, gives a general account of all the work of the grade and a more detailed report of the activities that grew out of *mail* as a center of interest. Anyone who likes seven year old children and finds them interesting will be absorbed in the book. Teachers, particularly elementary teachers and especially primary teachers, primary and general elementary supervisors, all students and workers in the educational field, and others interested in child psychology and the learning process in children, regardless of the educational philosophy they accept, will profit from reading Miss Hughes' chronicle of what her room of second grade children did.

Carrying the Mail is a concrete human document. It has little of the abstract in it. The author has something to tell and tells it so clearly and simply that the reader is rarely or never aware of any technique of writing employed. The absence of technical terminology, the objectivity of the point of view, and the quality of the author's style, which makes the reader conscious only of a group of boys and girls enthusiastically responding, under skilful guidance, to the natural drive of a worth-while interest, are most commendable. Possibly this is due to Miss Hughes' intimate contact with small children. If so, many writers of educational literature might improve their style by such contact.

Is the book scientific? In the best sense of the word, yes. It contains a wealth of facts from which the author derives directly what conclusions she makes. If one defines science in education as dealing with the limited scope of facts which can be reduced to number through measuring devices, he will, of course, not agree with the statement that the book is scientific. In the growth of any science there is a time wherein all sorts of pertinent facts are accumulated and classified by experts before the elements to be measured can be determined. No science is entirely out of this stage. Such carefully collected and classified facts are the necessary foundation of any science. Measurement is an added means of refinement of the process. "Carrying the Mail", as do other publications of the Lincoln School Staff and similar writings, contains the kind of facts on which a science of education will ultimately rest, regardless of the definition one applies to *science*.

The guiding philosophy of Miss Hughes in her teaching is that known as the "child needs" philosophy. *Carrying the Mail* demonstrates that adult needs will

not be neglected when the children's present worth-while needs are met. Children are intensely interested in the activities of adults. What is more adult than carrying mail? The book gives considerable evidence that the skills and tools which are the basis of the traditional school curriculum are readily, effectively, and quickly mastered by children at the time they realize the need of such skills as they study about their immediate physical and social world, a world about which they are intensely curious. As they study the "mystery, romance, and adventure" in their immediate world, they will, if given an opportunity and guidance, dramatize through make-believe all they discover. It is then that all sorts of creative talents are given an outlet. All of this is revealed in *Carrying the Mail.*

Three facts must not be overlooked in recommending this book: Lincoln School with its equipment and facilities as compared to that of the great majority of schools; New York City with its rich possibilities for observation as compared to many communities in the United States; and the fine training and ability of Miss Hughes for the work she is doing as compared to the training and ability of a great portion of the elementary teachers of this country. However, the fundamental principles are applicable to any school in any community.

The bibliography in the appendix of the book is excellent.

As a last comment, it is probably safe to say that most adults, even well educated adults, can learn much about the mail service of this country through reading *Carrying the Mail.*

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WILKINSON, MARY S. *Chairman. The Right Book for the Right Child: A Graded List of Children's Books.* Compiled by a committee of the American Library Association and graded by the Research Department of the Winnetka Public Schools (New York: John Day Company, 1933), pp. xxvi + 359.

The purpose of this attractive, new book list is to help parents, teachers, and librarians in selecting books suitable for individual children as well as groups and to serve as a graded buying list. The titles represent recreational reading rather than supplementary school material, and were chosen from the standpoint of content and literary quality by a committee of children's librarians. This committee was also responsible for the scheme of grouping, naming of editions, and editing the annotations. Several editions are given; the first one listed is the one recommended, regardless of cost, followed by the best of the inexpensive editions, and a third best.

The list is graded from the first through the sixth grades, followed by a junior high school list covering Grades VII and VIII. A prefacing paragraph to each graded section states that the books included in the list can also be read and enjoyed by many children of the grade below and above the given grade. Following the junior high school list is a very well selected list of verse. Preceding the graded list is a pre-school list, which includes picture books and books to read aloud to children between the ages of two and five. This list is compiled by experts in pre-primary education. The supplementary primary list is the work of primary teachers. A very helpful feature of the pre-school list is the annotated list of ten-cent books. This

would be much more helpful if it were more inclusive.

The organization of the material within the graded lists is unique and valuable. The arrangement of the list was based upon a questionnaire study made to ascertain the need of such a list and the desired order. Within the grades the list is divided into three groups, giving first, second, and third choices for libraries, of, respectively not more than 500 (Group I), 600-1000 (Group II), and over 1000 titles.

The basis for grading the books was worked out by the Research Department of the Winnetka Public Schools. It consists of an analytical comparison of books of unknown difficulty, age, and sex placement with books which have been widely read and enjoyed by children of known age, sex and reading skill. The second group of books referred to was used as the basic list and is known as the Winnetka Book List, or What Children Like to Read. The new books were analyzed for difficulty, and a formula constructed, based on vocabulary and sentence structure. The books in the present list of the same titles as those in the basic list were not re-analyzed, and the same ratings were used. These books are indicated by the letters "W. L."

The authors responsible for the grading state that there are unmeasured factors which may raise or lower a book from the grade in which the analysis has placed it; also, that keen interest on the part of the child may result in his reading a book one or two grades above his reading level. The grading of the new titles on the basis of the "difficulty formula" seems, on the whole, to be truer to the experience of workers with children, represented by actual use of the books with children, than do those books graded on the Winnetka Book List basis. Where a book appears obviously misplaced, there is a prefacing note stating that this book may interest older or younger children because of make-up or subject matter. "Pran of Albania" by Miller illustrates the fact that a "difficulty formula" is not always a true index of grading as representing interest. Because of the subject matter, plot, and combination of elements representing style, this book is more interesting to children, especially girls, of the seventh and eighth grades than to children of the fourth grade, where it is placed. This is especially true of Lagerlof's "Liliecrona's Home," which could be enjoyed or understood by few children in the fifth grade. Other influencing factors counteract those of sentence structure and vocabulary. The nursery classic, "The Golden Goose Book" by Leslie Brooke, placed in the fifth grade, would practically never be read by a fifth-grade child, if he were normal, because of subject matter and format. There is great danger, as well as virtue, in bringing all vocabulary within a narrow grade range. It allows for neither development of the imagination nor ambition, and is in danger of producing mental laziness. The junior high school list seems to show less grade displacement, so far as actual use of the books with children is concerned.

The format of the booklist is pleasing in every way. The descriptive notes are suggestive and helpful. A directory of publishers is given and a full index, arranged alphabeticaly by author, title and subject. Under the subject headings, fiction books are indicated. Using the lists for individual reading guidance presupposes the giving of a standardized reading test. Thus, a reference is made as to where such tests may be obtained. It would be valuable if some objective method could be found for determining the number of titles for each grade level, and

especially the distribution of books among the various types of material as determined by children's preferences.

It is unfortunate that the old Winnetka grading scheme was used at all in the present booklist, but it does not destroy the usefulness of the book. The order of books within the grades, or index of popularity of the Winnetka Booklist seemed particularly unsound. For example, it resulted at times in such a situation as this: if one hundred children in ten cities read one book, this index would represent this book as ten times as popular as if the book were read by one hundred children in one city. Also, the "interest value" weighting led sometimes to absurd results, e.g., the books "Memoirs of a London Doll" and "Story of Live Dolls" were rated as liked by 67 percent of the boys, because three boys had read these books and marked them "liked." If one more boy of the group of twenty-five children had marked the ballot "liked", the "interest value" for these titles would have been 100 percent for boys!

The difficulty grading attempted in both lists under discussion is a very suggestive and constructive work, and both a help and a challenge. Especially in rural and under privileged communities a booklist which identifies interesting and worth-while books, which are also "easy reading" is a very valuable tool. There has not been enough attention paid to this need, and the present work is a most promising beginning.

While the grading in the present differs at times strikingly, as has been pointed out, from experience, the authors state frankly that this may be due to the fact that the formula itself is not 100 percent accurate and that other factors besides those measured may creep in to influence the actual stage at which a child is likely to enjoy the book. Besides vocabulary and sentence structure, there are such elusive factors as interest value, influenced, as it is, by the child's heritage, environment, dominant interests at different ages, mood, etc., and style—a combination of all elements colored by the author's personality and skill.

Another difficulty in grading books objectively is the fact that publishers often bring out a book with a format which appeals to children of one age, whereas the style or subject matter of the book makes it suitable to children of quite a different age, e.g. "Polly Patchwork" by Rachel Field, "How the Derrick Works," etc. It would be a valuable by-product of such booklists as the two being discussed if authors and publishers would take greater care in coordinating format and age or grade level.

To the mind of the reviewer, this is a most useful list and should be of great value to teachers, parents, children, and school librarians. The range of titles and subject matter, inclusion of recent material, and attractive appearance and arrangement make it a most helpful aid to children's books and reading.

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RESEARCH ABSTRACTS and BIBLIOGRAPHIES

Address all communications relative to research abstracts and bibliographies to A. S. Barr, University of Wisconsin, Madison, Wisconsin.

BULLETINS

CABB, WILLIAM G. *School Finance*, School Economy Series (Stanford University, California: Stanford University Press, 1933), v + 106 pp.

This monograph contains a discussion of recent trends in school finance; some principles basic to school finance; education, taxation, and economic welfare; and current methods in school finance.

COOK, KATHERINE M., AND REYNOLDS, FLORENCE E. *The Education of Native and Minority Groups:* A Bibliography, 1923-1932, Bulletin No. 12 (Washington: Superintendent of Documents, Department of the Interior, 1933), v + 52 pp.

This bulletin contains a general discussion of the problems, of the education of native and minority groups, how certain foreign governments are meeting educational problems of native groups, the education of Indians in continental United States, Alaska and native Alaskans, the American West Indies, Philippine Islands, and Hawaii and other Pacific insular parts.

GOOD, WARREN R. *The Elements of Statistics* (Ann Arbor, Michigan: Ann Arbor Press, 1933), 28 pp.

The purpose of this monograph is to provide an introductory course in statistical methods. The author discusses measurement and tabulation, measures of central tendency, measures of dispersion, measures of relative position, measures of relationship, measures of unreliability, and statistical method in research.

HURD, ARCHER WILLIS. *An Experiment in the Use of a Teaching Unit in Science* (New York City: Institute of School Experimentation, Teachers College, Columbia University, 1933), vi + 50 pp.

This bulletin contains a discussion of the significance of the experiment, basic conceptions underlying this experiment, selection and organization of subject-matter for the unit, evaluation of the outcomes of the use of the experimental unit, and need for further experimentation. Appendix.

GRAVES, FRANK PIERREPONT. *Report of a Study of New York City Schools*, Part I: The Administrative-Supervisory Organization; Part II: Evaluation of Achievement (Albany: University of the State of New York Press, 1934), Part I, 89 pp.; Part II, 45 pp.

Part I of this report contains a statement of the steps leading up to the investigation, development of the administrative organization of the New York City school system, the present organization of the New York City school system, and recommendations for the improvement of the administrative-supervisory organization. Part II contains an intro-

duction, a discussion of the general level of achievement, rate of pupil progress through the grades, range of achievement in each grade, differences in average achievement between schools, school's adaptations to pupil needs, summary of findings, administrative provisions for individual pupil needs, and recommendations.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

LAYCOCK, SAM R. "The Bernreuter Personality Inventory in the Selection of Teachers," *Educational Administration and Supervision*, XX (January, 1934), pp. 59-63.

From a study of eighty students graduating from the College of Education, University of Saskatchewan, Saskatoon, Canada, the author concludes that the Bernreuter Personality Inventory is a promising measure for the pre-training selection of teachers.

RICHARDSON, ALLEN B. "A Study of the Relation between Number of Study Periods and Pupils' Marks," *School Review*, XLII (February, 1934), pp. 104-110.

From a study of the marks of pupils enrolled in the John Adams High School, Cleveland, Ohio, the author concludes that other schools faced with a like problem may reduce the number of study periods with confidence, and that in so doing they will not greatly reduce the scholastic attainment of the pupils.

EXPERIMENTAL STUDIES OF LEARNING AND TEACHING

ALMACK, JOHN C., AND STAFFELBACH, E. H. "Spelling Diagnosis and Remedial Teaching," *Elementary School Journal*, XXXIV (January, 1934), pp. 341-350.

This is the third and last of a series of three articles dealing with diagnosis and remedial teaching of spelling.

EARHART, WILL, AND GATTO, FRANK M. "An Experimental Study of Creative Work in Public School Music," *Pittsburgh Schools*, VIII (November-December, 1933), pp. 44-56.

From an experimental study of the creative and conventional methods of teaching fifth-grade music, the authors find the results favorable to the former.

EDMISTON, R. W. "Test Results Show That the Objective Sought Determines the Most Productive Teaching Method," *Peabody Journal of Education*, XI (January, 1934), pp. 175-180.

From an experimental study of four groups of 30 pupils each, the author recommends that teaching methods be adjusted to the objective desired.

GATTO, FRANK M. "Experimental Studies on the Use of Visual Aids in the Teaching of Geography," *Pittsburgh Schools*, VIII (November-December, 1933), pp. 60-83.

From an experimental study conducted in 5B classes in the Pittsburgh public schools, the author concludes that the addition of motion picture films to lantern slides, still-films and stereographs increases learning by about 14.5 percent.

GREENE, EDWARD B. "The Legibility of Typewritten Material," *Journal of Applied Psychology*, XVII (December, 1933), pp. 713-728.

From an experimental study involving 1950 college students, the author reports

that there was no reliable difference in the speed and accuracy of reading four sizes of type, 7, 10, 12, and 14 point; there was a slight tendency for the leaded samples to be read more rapidly than the solid; and there was a very slight tendency for an 80 mm. line to read faster than a 176 mm. line.

HILDRETH, GERTRUDE. "Reversals in Reading and Writing," *Journal of Educational Psychology*, XXV (January, 1934), pp. 1-20.

From a statistical analysis of individually administered tests given to elementary school pupils, the author finds that the tendency toward reading and writing reversals declines in the upper grades.

MASLOW, A. H. "The Effect of Varying External Conditions on Learning, Retention, and Reproduction," *Journal of Experimental Psychology*, XVII (February, 1934), pp. 36-47.

After presenting a summary of previous investigations, the author presents the results of two experiments from which he finds some support for the theory that similar conditions for learning and recall are more efficient than dissimilar conditions.

MCGEOCH, J. A., AND MCKINNEY, F. "Retroactive Inhibition in the Learning of Poetry," *American Journal of Psychology*, XLVI (January, 1934), pp. 19-33.

From an experimental study of retroactive inhibition, the authors found that interpolated non-sense syllables produced roughly the same amount of inhibition as does interpolated poetry, this finding seeming to support the perservation rather than the transfer theory of inhibition.

STEPHENS, J. M. "A Change in the Interpretation of the Law of Effect," *British Journal of Psychology*, XXIV (January, 1934), pp. 266-275.

A critical discussion of Thorndike's law of effect in which the author contends that Thorndike depends upon the theory of congruity of which Thorndike has elsewhere been particularly critical.

CURRICULUM RESEARCH

BACHMAN, FRANK P. "Divided and Continuous Curricula for the Education of Elementary Teachers," *Peabody Journal of Education*, XI (January, 1934), pp. 154-163.

From a study of the catalogue of one teacher training institution from each of the forty-eight states, the author recommends the discontinuance of the divided curricula in the training of elementary school teachers.

FITZGERALD, JAMES A. "The Vocabulary of Children's Letters Written in Life Outside the School," *Elementary School Journal*, XXXIV (January, 1934), pp. 358-370.

From an analysis of 3,184 personal letters comprising 461,321 running words, the author presents a new word list.

STÜCKRATH, F. *Die Hamburger Lehrerbildung* (Teacher Training in Hamburg), J. Beltz, Langensalza, 1933.

The author gives a detailed exposition of the post-war teacher training work at the University of Hamburg in anticipation of the possible significance of the Hamburg Plan for a uniform reorganization of teacher training in the National

Socialistic Germany. The pamphlet is richly illustrated with tabular and documentary data. (Wm. Reitz, Chicago.)

CHILD WELFARE, GUIDANCE, AND DEVELOPMENT

BURKERSRODE, JOHANNES. *Anweisung zu dem Testheft für die Fest-stellung der Gutbegabten des 4. Schuljahres* (Manual to Testfolder for the Determination of the Gifted of the Fourth Grade). Päd.-Psych. Arbeiten aus dem Institut des Leipziger Lehrervereins. Dürr'sche Buchhandlung, Leipzig, 1933.

Brings norms, averages, and sigmas, etc., of an attempt to validate a battery of thirteen individual tests on thinking, linguistic ability, mathematical aptitude, memory, and other functions, such as ability to observe, attention, and speed of work, on somewhat 7,500 fourth graders of Leipzig. (Wm. Reitz, Chicago.)

FISHER, MILDRED L. "Measured Differences between Problem and Nonproblem Children in a Public-School System," *Journal of Educational Sociology*, VII (February, 1934), pp. 353-364.

From a statistical analysis of the results secured from the application of a number of measures to problem and nonproblem children, the author found that the most reliable group differences were in the social and emotional fields.

LORGE, IRVING. "The Chimera of Vocational Guidance," *Teachers College Record*, XXXV (February, 1934), pp. 359-371.

The author offers a critical discussion of the claims of vocational guidance based upon a survey of investigations in this field.

SNYDER, LOUISE MAY. "The Problem Child in the Jersey City Elementary Schools," *Journal of Educational Sociology*, VII (February, 1934), pp. 343-352.

The author presents an analysis of a sample of 13,632 pupils in the Jersey City elementary schools with data on the relationship between intelligence, socio-economic and other factors and delinquency.

WILLIAMS, HERBERT D. "A Survey of Predelinquent Children in the Schools of Ten Midwestern Cities," *Journal of Educational Sociology*, VII (February, 1934), pp. 365-370.

The author presents a survey of the percentage, distribution, and behavior characteristics of problem children in ten midwestern cities.

MEASUREMENTS, STATISTICS, AND THE METHODOLOGY OF SCIENTIFIC RESEARCH

BOBERTAG, OTTO. "Leistungsschätzung und Leistungsmessung in der Schule" (Estimate and Measurement of School Achievement). *Zeitschrift für Pädagogische Psychologie und Jugendkunde*, XXXIV (October, 1933), pp. 377-393.

Twenty-two teachers estimated the difficulty of items or problems in tests of reading, vocabulary, language usage, spelling, problem solving, and number computation. The teachers' medians and ranges in percentages are reported and compared with the difficulty assigned to each item in form of the median percent of correct answers or solutions of several hundred pupils for each category. The comparison shows considerable differences; especially is there a general tend-

ency on part of the teachers of overestimating achievement of pupils. (Wm. Reitz, Chicago.)

BRUECKNER, LEO J., AND HAWKINSON, MABEL J. "The Optimum Order of Arrangement of Items in a Diagnostic Test," *Elementary School Journal*, XXXIV (January, 1934), pp. 351-357.

From an analysis of test results the authors conclude that diagnostic tests suitable for individual diagnosis should consist of at least four examples of each type of exercise and these may be placed together in sequence rather than scattered throughout the test at random.

CHADWICK, J. ELBERT. "Predicting Success in Sight-Singing," *Journal of Applied Psychology*, XVII (December, 1933), pp. 671-674.

From a statistical analysis of the test results from a college achievement test, the American Council Psychological Examination, and five of the Seashore musical talent tests given to 39 students in the Colorado State Teachers College, the author finds that the musical talent tests are about two and one-half times as indicative of probable success in music as intelligence tests and twenty-five times as effective as tests of general knowledge of school subjects.

MAGILL, WALTER H. "The Influence of the Form of Item on the Validity of Achievement Tests," *Journal of Educational Psychology*, XXV (January, 1934), pp. 21-28.

The author offers data upon the form of test items and the validity of achievement tests, indicating that various types of tests cannot be indiscriminately used in test construction.

SEGEL, DAVID, AND GERBERICH, J. R. "Differential College Achievement Predicted by the American Council Psychological Examination," *Journal of Applied Psychology*, XVII (December, 1933), pp. 637-645.

The authors present a statistical study of the American Council Psychological Examination as an instrument for differential prediction in the subjects of English, foreign languages, and mathematics. The coefficients of correlation between scores on the parts of the American Council test and the differences between college marks were zero or negligibly small.

WRIGHTSTONE, J. WAYNE. "Validity of the Woodworth-Mathews Personal Data Sheet for Diagnosing Certain Personality Disorders," *Journal of Educational Psychology*, XXV (January, 1934), pp. 39-44.

From a study of the agreement between independent description of the emotional status of pupils as judged by the school staff and responses on the Woodworth-Mathews Personal Data Sheet, the author found an agreement of 91.3 percent.

MISCELLANEOUS

CHAMBERS, M. M. "Legal Problems of State Normal Schools and Teachers' Colleges," *Elementary School Journal*, XXXIV (January, 1934), pp. 371-381.

The author summarizes the legal situation as it relates to state normal schools and teachers colleges.

TOUTON, FRANK C. "Research Projects of Secondary School Level Carried on in California Cities during 1932-1933," *California Quarterly*, IX (January, 1934), pp. 167-194.

A descriptive list of research projects relating to secondary education carried on in California cities during 1932-33.

RESEARCH NEWS and COMMUNICATIONS

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Yearbooks of Departments of the N. E. A.—The National Education Association reports the following yearbooks which are completed or in process of preparation. The list includes only those yearbooks which are cleared through the Research Division. Several other departments of the National Education Association publish yearbooks which are edited outside of the headquarters staff.

1. The 1934 Yearbook of the Department of Classroom Teachers is entitled, *Teacher and Public.* One of the most urgent problems confronting educators in the present emergency is that of keeping the public informed about the work of the schools. Of particular significance is the contribution to school interpretation that classroom teachers can make because of their many direct contacts with patrons and pupils. Recognition of this fact led the Department of Classroom Teachers to select the theme of the Eighth Yearbook. The Yearbook is written from the teachers' point of view and for everyday reference use in matters where public relations are involved. The first half of the volume presents information with which teachers should be familiar in order to participate helpfully in a public-relations program. Emphasis is placed on the functions and needs of the school in a changing economic and social order; important facts are given relating to educational finance; the modern teacher is described both as a member of the teaching profession and as an individual occupying a strategic place in the community. The remainder of the volume deals with methods, devices, and agencies that can be used effectively in educational interpretation. The discussion deals in turn with using the press and the radio, interpreting the school through pupils and their activities, working through teachers' organizations, and coöperating with lay organizations. This Yearbook was distributed at the convention of the Department of Superintendence held in Cleveland, February 24 to March 1, 1934. The Chairman of the Committee in charge of the publication was Daisy Lord of the Waterbury, Connecticut, public schools.

2. The 1934 Yearbook of the Department of Elementary School Principals is entitled, *Aids to Teaching in the Elementary School.* The purpose of the volume is to bring sharply into focus the use of various auditory and visual devices. Particular attention is to be given to the role of the principal in using and in training his teachers to employ the various aids available. Among the topics in the preliminary outline of the Yearbook are: radio, motion pictures, posters, exhibits, museums, excursions, mounted pictures, and lantern slides. It is expected that manuscripts will include not only descriptions of classroom technique, but also controlled experimental studies. The report also will summarize a number of the research studies in the field of teaching devices. The chairman for the

Editorial Committee in 1934 is John S. Thomas, Clippert School, Detroit, Michigan. According to present plans the Yearbook will be completed about April, 1934, and will be printed during the summer months.

3. The 1935 Yearbook of the Department of Elementary School Principals is to deal with *The Integration of School-Life Activities.* This statement of the problem is an attempt to broaden the field ordinarily classified as extracurriculum activities. Today when the so-called "fads and frills" are under fire, while at the same time the amount of leisure is increasing, it is believed that this topic will be timely. As in previous yearbooks, the plans are for a combination in a single volume of theoretical treatments, descriptions of practical experiences, and reviews of research studies. Members of the Editorial Committee will begin to receive manuscripts about April of 1934. Manuscripts will be discussed with the authors and revised, looking forward to completion of the report about April of 1935. The Chairman of the 1935 Yearbook Committee is Bess Clement, Eliza Clark School, Clarksdale, Mississippi.

4. The 1934 Yearbook of the Department of Superintendence is entitled, *Critical Problems in School Administration.* Chapters in the volume include the following titles: "The Structure of Government and Its Effect upon the Administration of the Schools," "The Scope of Education and the Local Administrative Unit," "The Financial Support of Public Education," "The Lay Control of Public Schools," "Professional Administration in School Control," "Efficiency in School Management," "The Teaching Staff and the Formulation and Execution of Administrative Policies," "Economy in School Administration," and "Helping Citizens to Know Their Schools." An attempt has been made in the Yearbook to state a number of the fundamental principles underlying public education. An effort has been made to present materials which will be helpful to superintendents and administrators during the present crisis. The Chairman of the 1934 Yearbook Commission is Superintendent Ben G. Graham, of Pittsburgh, Pennsylvania. The report was completed and mailed to the members of the Department before the winter meeting in February.

5. The 1935 Yearbook of the Department of Superintendence is to discuss the topic, *Education for New Social and Economic Relationships.* According to present plans the members of the Commission in charge of this Yearbook will study social and economic trends within the United States and from such evidence will attempt to deduce suggestions which will be helpful to superintendents in adapting their schools to this era of change. It is expected that this report will be helpful to administrators in seeing the practical applications of some of the current theory and philosophy regarding an evolving social organization. The Chairman of the Commission is Superintendent J. W. Studebaker of Des Moines, Iowa. The Yearbook is expected to be in final manuscript form about the first of December, 1934, and will be sent to the members of the Department during February, 1935.

Standards in High Schools.—The six regional accrediting associations, covering the entire territory of the United States, including Canal Zone schools and a few secondary schools in other countries, have placed the names of approximately 4600 secondary schools on their membership lists and have thus given them the stamp of approval. Who can

say whether these are the best public and private schools in the United States? In any given test these 4600 schools would, of course, average higher than the mean of the 15,000 non-members. But, how many of the 4600 are actually weak and inefficient schools? How many of the non-members are better secondary schools than the poorest 500 or 1000 of the members? Who knows?

The commissions on secondary schools of the six regional accrediting associations have set themselves the task of finding an answer to the question, "What is a good high school?" George F. Zook, United States Commissioner of Education, has given his unqualified support to the study and has already rendered valuable assistance in getting the study started. The Chairman of the Committee is G. E. Carrothers of the University of Michigan, who prepared this statement.

Each regional association has a set of standards for use in selecting schools to be approved. These have been built up, standard by standard, over a long period of time, and, as some claim, possibly without due regard to changing social conditions. It is always the hope that only qualified schools will be selected. It is also hoped that no good school applying for membership will be rejected. Yet the standards, for the most part quantitative in nature, may exclude schools doing a high quality of work.

Quantity even today is of great importance, but quality is of still greater significance. It may be that a good quality of product is possible without the necessity of meeting all of the carefully developed, specially prescribed, quantitative measures. To find the measure of quality is the first and most important reason for launching the study.

A second reason for this undertaking is to work out a plan by means of which the regional associations may come to be considered somewhat less as a police force and more as helpful, stimulating, encouraging friends. At present, too large a part of the accrediting work is that of checking on member schools to see that they do not violate any of the sacred rules and regulations. Regional associations should be in the most favored position for helping growing, dynamic schools.

The six regional associations by working together can accomplish much through coördinated investigation. The present is a favorable time for the inauguration of such study, since the twenty-eight volumes of the National Survey of Secondary Education are now coming from the press and contain a large amount of useful information.

The Commission on Institutions of Higher Education of the North Central Association is just now completing a study of standards for use in accrediting colleges. Dr. Zook and this committee doubtless have noted some difficulties along the way which they can help the secondary commissions to avoid. They probably have developed certain techniques which can be used again. They doubtless have discovered certain guiding principles which will be useful to a committee organized to study standards for the accrediting of secondary schools.

Change in Name of the Historical Outlook.—With the January, 1934, number, the *Historical Outlook* became the *Social Studies*. The American Historical Association, with the advice and coöperation of the National Council for the Social Studies, assumes responsibility for financing and directing the editorial management of the magazine. The journal will be devoted to all the social studies in elementary school, high school, and

the junior college, with special emphasis at the secondary level. Greater emphasis will be placed on the content, interpretation, and analysis of social studies, but problems of methods, devices, teaching aids, and testing will not be neglected. In fact, the editorial board considers that content and method cannot be sharply differentiated without harm to both phases of instruction. The new managing editor is W. G. Kimmel, with A. E. McKinley, former managing editor, listed as editor.

Rosenwald Fund.—The report of the Julius Rosenwald Fund, which reviews the work of this foundation for the two-year period, 1931-1933, contains an interesting account of the life of the founder who died in 1932 at the age of seventy. The generosity of this philanthropist is represented in part by a summary of his larger gifts.

"Statistical summaries show that Mr. Rosenwald's philanthropies totaled between sixty and seventy million dollars, depending on the market valuations given to several large gifts which he made in stocks rather than in cash. Large subdivisions of his total gifts are: to the foundation which he created, $20,000,000; to Negro education and welfare other than through the Fund, $4,000,000; to the University of Chicago, $4,000,000; to Jewish farm colonization in Russia, $5,000,000; to Jewish charities and Jewish institutions, $5,000,000; to war work and war relief, $2,000,000; to arts and crafts and industrial museums, $5,000,000; to general education and research, $3,000,000; to hospitals and health agencies, $3,000,000; to other causes, including the family trust created to carry on certain of his charitable interests after his death, $10,000,000."

The report also describes the activities of the Fund over the past two years in the fields of: rural schools and Negro education, Negro health, economic status of Negroes, medical economics, and general education and social studies.

Payne Fund Studies.—This organization is financing four projects: (1) the teaching of motion picture appreciation, (2) the Civics Research Institute, (3) radio research, and (4) basic English. The motion picture project is an outgrowth of the studies made by the Payne Fund Committee on Educational Research in Motion Pictures which was in charge of W. W. Charters of Ohio State University. The Civics Research Institute is directed by L. J. O'Rourke of Washington, D. C. The radio research work is being done at Ohio State University under the direction of Dr. Charters. Basic English is a new international auxiliary language of 850 words which has been perfected by C. K. Ogden, Director of the Orthological Institute, Cambridge, England. While the basic English system has been completed, research in the field of language is being continued by the Orthological Institute with the support of the Payne Fund.

New Jersey Survey.—The School Survey Commission urges immediate repeal of the New Jersey state property tax for schools and the introduction of a foundation educational program, assured by eliminating present inequalities in distributing state funds to local school districts. According to the findings, drastic legislative action to relieve the overburdened property owner must be adopted at once if the public school system is to avoid a general breakdown. The report, published in two volumes, cites the para-

doxical anomaly existing in New Jersey today, where examples of the finest school opportunities in the country, as well as extremely poor schools, are found within the borders of the state.

The report is being distributed by Solomon C. Strong, Secretary of the Commission, West Orange, New Jersey. Appointed by Governor Moore, October 25, 1932, the Commission has been studying means of improving school conditions in New Jersey for more than a year. The investigation was made under the supervision and direction of Paul R. Mort of Columbia University.

In addition to advocating the immediate repeal of the New Jersey state property tax, the Commission urges:

1. Introduction of a simplified state-support program.

2. Introduction of a foundation educational program which will give equal opportunities to all children in the state, regardless of the taxable wealth of the district in which they live.

3. More equitable distribution of state aid for education.

4. Raising of $18,000,000 from taxes other than the property tax for support of public schools.

5. Guarantee by the state of $13 per elementary pupil and $22 per high-school pupil.

6. Receipt by local districts of their full share of taxes collected by the state, without penalty because of tax delinquencies.

7. Complete reorganization of public school finance.

The Commission also suggests means by which savings of $13,350,000 may be effected by the schools without sacrificing any recognized standards of education:

1. Slight increases in class size in Grades 1 to 8 and the elimination of small classes in academic high-school subjects.

2. Increase in size of classes in home economics and industrial arts in the elementary and secondary schools and in classes for mentally and physically handicapped children.

3. Elimination of mandatory regulations requiring all schools to accept five-year-olds.

4. Decrease in the number of janitorial-engineering employees.

5. More careful consideration of such factors in the operation of the school plant as the purchase and firing of fuel and the costs of lighting.

6. Better utilization of buildings.

7. More careful planning of buildings to reduce depreciation and obsolescence and to increase utilization.

8. Reorganization of rural districts to make rural school districts larger and more efficient.

9. Reorganization of transportation to eliminate waste.

A recommended state program to promote economical operation of the schools includes:

1. The continuous study by the state department of education of the transportation problem in individual districts to assist county superintendents in working out coöperative transportation plans in districts where the transportation problems overlap and to establish reasonable standards for reimbursements for the cost of school transportation.

2. Provision by the state department of education of more advisory service for the local communities in placing and planning school buildings.

3. The development by the state department of education of adequate unit-cost figures, and continuous service to communities in the appraisal of present costs and in elimination of waste.

4. The elimination of state mandatory regulations requiring the acceptance of five-year-old children in school and requiring the regular employment of school physicians.

Conference on Business Education.—Educators in general, and business educators in particular, are increasingly becoming interested in the abolition of "economic illiteracy." One of the neglected fields of education has been the adequate training of the consumer. Because this specific problem is of vital interest to business educators, it will be the central theme of the Second Conference on Business Education, to be held at the School of Business of the University of Chicago on June 27 and 28. The first Conference, which was of nation-wide interest among business teachers, was concerned with the general problems of the reconstruction of business education at the secondary level; the second conference is in a sense a development from the problems which grew out of the first meeting. Many leaders in the field felt that more attention should be focussed on the perplexing question of what can be done to make the consumer more intelligent in his economic activities.

Travel and Study in Europe.—Opportunities for those interested in European tendencies in modern education are offered through several travel-study courses to be given this summer under the auspices of the American Peoples College in Europe at a minimum cost. The college, a non-profit making institution, was founded five years ago in one of the most beautiful valleys of the Austrian Tyrol by a group of American educators interested in bettering international understanding. Soren A. Mathiasen, an Oberlin graduate, is educational director, and among the sponsors are John Dewey of Columbia University, Harry Overstreet of the College of the City of New York, and George S. Counts of the International Institute of Teachers College, Columbia University.

In addition to the summer travel courses of nine and a half weeks and three months, the college is arranging four weeks of study and travel for those who have only short vacations, and Sabbatical leave programs six months in length. Each group spends some time at the informal college center in the Tyrol where European leaders of thought give lectures and lead discussions on current conditions, and give a good preparation for the travel to come later. Then in small groups, formed according to predominating interests—drama, education, economics, music, or general social conditions—the members travel through Europe where special contacts previously have been made in all the countries to be visited. Full information may be obtained from Webster Bowers, The American Peoples College in New York City.

English Lecturer.—Dr. Albert Mansbridge of England, Founder and President of the World Association for Adult Education, is to lecture in the United States under the auspices of the Institute of International Education during March and April of this year. He will deliver a course of lectures at the Lowell Institute in Boston during March and will be available for additional lectures in that vicinity. He will speak as far west as Chicago during April. Dr. Mansbridge is a member of the Consultative Committee of the Board of Education, Founder of the Workers' Educational Association in England and Australia, and author of

"University Tutorial Classes," "An Adventure in Working Class Education," "The Older Universities of England," and "Margaret McMillan, Prophet and Pioneer." He is offering as the topics of his addresses: "Universities and the People," "Adult Education in England," "The Pre-School Child," "Margaret McMillan: Pioneer of Nursery School and Child Education," "Great English Figures: (1) Richard Burdon Haldane, (2) Charles Gore, and "The Story of Oxford and Cambridge" (illustrated).

New Monograph Series.—The School of Education of the University of Southern California announces the publication of a series of Education Monographs, which will consist of student and faculty publications of especial merit and interest. The primary purpose of this new venture is to make the results of pertinent educational investigations available for members of the teaching profession. The titles now in print are as follows:

No. 1, *The Educational Philosophy of Giovanni Gentile*, by M. M. Thompson.

No. 2, *The Evolution of Business Education in the United States and Its Implications for Business-Teacher Education*, by Jessie Graham.

No. 3, *Problems and Practices in Housing the Junior College Program in California*, by C. D. Hardesty.

No. 4, *The Organization and Administration of Curriculum Programs*, by C. C. Trillingham.

No. 5, *A Group Factor Analysis of the Adjustment Questionnaire*, by R. C. Perry.

The monographs are to be published bimonthly and will sell for $1.50 per single issue, or four numbers for $5.00.

Two Federal Agencies United.—The functions of the Federal Board for Vocational Education have been transferred to the United States Office of Education with the title of J. C. Wright changed from Director of the Board to Assistant Commissioner for Vocational Education, but with no change in duties. It is expected that the union of these two agencies will promote more effective coördination of their respective functions.

Science in Adult Education.—The American Association for Adult Education, 60 East 42nd Street, New York City, has undertaken a study of the place of science in the field of adult education. The study will be in charge of Benjamin C. Gruenberg, Associate in Science. It is especially desired to secure information as to successful practices, and as to existing needs that are not being met. Interested scientists and educators are invited to send their suggestions and inquiries to the above address.

Organization of Higher Education in the United States.—A future yearbook of the National Society for the Study of Education will deal with the organization of higher education. The chairman of the committee charged with preparation of the yearbook is President L. D. Coffman of the University of Minnesota, who states the problem as follows:

"Higher education in the United States has not evolved according to a set plan, nor does it, in its present state of development, represent a single pattern. The desires of individuals to memorialize

themselves, the ambitions of groups, sects, and organizations, have played conspicuous parts in the development of higher education in the United States. America's program of higher education, like her program of secondary and elementary education, originates in response to human needs; it develops and modifies its forms as these needs change. A discussion of the changes now taking place in the social and political worlds and the impact of these changes upon higher education, would reveal how intimate this relationship really is. It would show that higher education is not distinguished so much by types or kinds of schools as by the kinds of service it seeks to render.

"Higher education in America today is still built upon the idea that education at whatever level should be suited to the capacities of the individual and the social needs of the times. That this idea still dominates American thought is shown by the following facts:

"1. The junior college movement is spreading. This college, among other things, is designed to localize higher education.

"2. In many states this year, due to the present economic emergency, correspondence work and extension work are increasing, and the demand for college credit for it is almost overwhelming.

"3. The adult education movement is constantly increasing in strength. It is manifesting itself in all sorts of ways, not the least significant of which is a demand here and there which, I predict, will soon bear fruit, that there be established folk schools for adults similar to the Folk Schule of Denmark.

"4. The 'General College,' i.e., a college designed to give a general education directly and immediately related to the world of today—a college now being established as one of the units of certain universities—and which is soon likely to be required of freshmen and sophomores at many institutions, is likewise spreading. Most of the traditional college requirements will be removed for students in the General College.

"5. The traditional college, public or endowed, while experiencing many hardships at the present moment, is nevertheless still ministering to students who wish four years of thorough college training as a preparation for life in general.

"6. Universities are serving the needs of select groups of students—and this tendency will increase with time—who are interested in technical or professional preparation or in promoting research.

"The foregoing rough classification shows that 'higher education' in America is not easily defined. It is any form of education that serves the intellectual and aesthetic needs of older people, i.e., adults, regardless of whether they have ever graduated from a secondary school or not. Higher education in America is not organized in any real sense and in my opinion should not be; its strength lies in its fluidity and in its responsiveness to the needs of a changing society."

Engineering Education. — The first number of a new journal entitled, *Journal of Engineering Educational Research* appeared in December, 1933. It is edited and published by Clair V. Mann of the University of Missouri, whose address is Rolla, Missouri. The editor hopes that the journal may be issued at regular intervals, possibly monthly or quarterly. The first number contains an article by the editor entitled, "Measurement of Engineering Students." Aid was given by the Engineering Foundation, Inc., for publishing the first number, the price of which is fifty cents.

Character Research Service. — H. L. Latham, Room 717, 59 E. Van Buren St., Chicago, invites correspondence from readers interested in bibliographical information concerned with the field of character education. He has developed an extensive bibliography and index of published materials dealing with experiments, theory, case histories, procedures, courses of study, teacher training, and delinquency. An attempt has been made to cover worth while materials published since 1910 in English, French, German, Spanish, Italian, and Portuguese. Tentative plans have been worked out for publication of the bibliography which includes some four thousand titles. The index contains approximately 3600 main topics and sub-topics.

American Educational Research Association.—Table I is of interest in that it reveals major fields of research in which the members of this important investigational organization are carrying forward their studies.

Classification of Research during 1931-32.—Bulletin No. 6, 1933, of the United States Office of Education, entitled *Bibliography of Research Studies in Education, 1931-1932*, includes graduate theses and faculty research in education. Table II shows the fields investi-

TABLE I

REPORT OF ACTIVITY BY MEMBERS OF THE AMERICAN EDUCATIONAL RESEARCH ASSOCIATION IN JUNE, 1933

Fields of Research	Members Reporting Activity in Fields Indicated	
	Number of Members	Percent of Members
1	2	3
I. Achievement, Measurement of	44	37
II. Aims and Objectives of Education	10	8
III. Bibliographies	23	20
IV. Character Education	10	8
V. Curriculum	30	25
VI. Diagnosis, Educational and Physical	18	15
VII. Economic Aspects of Education	9	8
VIII. Research, Methods and Problems of	20	16
IX. Extra-class Activities	5	4
X. Guidance and Counselling	25	21
XI. Intelligence, Measurement of	27	22
XII. Remedial and Practice Material	17	14
XIII. Research, Methods and Problems of	14	12
XIV. School Administration		
a. Appraisal	5	4
b. Board of Education	1	1
c. Child Accounting	7	6
d. Local Finance	7	6
e. State Finance	8	6
f. Personnel	15	12
g. Public School Plant	7	6
h. Public Relations	1	1
i. Organization	8	6
j. Supervision	6	5
k. Surveys	15	12
XV. Teacher Training	22	18
XVI. Social Traits	18	15
XVII. Statistics	11	9
XVIII. Teaching and Learning, Methods of	30	25
XIX. Textbooks	9	8
XX. Miscellaneous	24	20

TABLE II

NUMBER OF RESEARCH STUDIES IN VARIOUS FIELDS OF EDUCATION, 1931-32

Subject	Doctors'	Masters'	Faculty Research	Total	Percent
1	2	3	4	5	6
1. Educational history and biography	20	59	8	87	2.78
2. Current educational conditions—United States	4	39	10	53	1.68
3. Current educational conditions—Foreign and international	18	32	2	50	1.60
4. Educational theory, special methods	10	51	10	71	2.27
5. Educational psychology, child study	8	31	14	53	1.68
6. Testing and research	17	70	56	143	4.57
7. Special subjects of curriculum	59	673	68	800	25.53
8. Elementary education, including preschool	9	45	7	61	2.26
9. Secondary education and junior colleges	17	123	17	157	5.03
10. Teacher training and status	45	113	25	183	5.85
11. Higher education	23	71	55	149	4.75
12. School administration	25	183	22	230	7.36
13. School management	8	153	23	184	5.89
14. School buildings	5	27	7	39	1.21
15. School health and physical education	20	131	15	166	5.31
16. Play, social aspects, and child welfare	17	59	4	80	2.56
17. Moral and religious education	6	65	11	82	2.62
18. Vocational training, including agricultural education, home economics, etc.	13	241	14	268	8.57
19. Guidance	2	38	5	45	1.44
20. Education of racial groups	9	40	1	50	1.60
21. Exceptional children	14	55	5	74	2.36
22. Education extension	4	14	...	18	.57
23. Education of women	4	8	2	14	.45
24. Libraries	2	54	8	64	2.05
Total	357	2,375	389	3,121	100.00

gated most frequently during the period represented, namely, September 1, 1931, through August 31, 1932.

The most popular fields were those of: (1) special subjects of the curriculum, (2) vocational training including such related subjects as agricultural education and home economics, (3) school administration, (4) teacher training, (5) school management, (6) school health and physical education, (7) secondary education and junior colleges, (8) higher education, and (9) testing and research.

Of the special subjects of the curriculum, those receiving the most attention were English grammar and composition, with a total of 82 entries; music, 77; psychology, 47; art, 46; modern languages, 44; social studies, 44; history, 41; and English literature, 38.

Teachers of English.—The National Council of Teachers of English announces the formation of the following new committees: Committee on Radio, Max J. Herzberg, Newark, chairman, to present plans for utilizing the radio in school instruction in English; Research Committee, Dora V. Smith, University of Minnesota, chairman, to coördinate research activities of the Council; Poets' Readings Committee, Robert C. Pooley, University of Wisconsin, chairman, to have charge of making and distributing records of poets' readings in collaboration with Professor Cabell Greet of Columbia University; College Reading Committee, Atwood H. Townsend, New York University, chairman, which has already published the *Students' Guide to Good Reading* for college students.

At the recent meeting of the Council (November 30 to December 2, 1933) Holland D. Roberts, chairman of the Public Relations Committee, announced that the *Guide to Play Selection*, an annotated index of plays for high school, college, and little theatre use, prepared by Milton Smith, Columbia University, and sponsored by the Council, would be ready for distribution by D. Appleton-Century Company in February.

Ida T. Jacobs, Roosevelt High School, Des Moines, chairman of the International Relations Committee, reported that a bibliography of material helpful to teachers and pupils on the subject of international relations and good will ha been prepared. The committee will assi in the planning of special day progra designed to promote international unde standing.

In his report on the National Council Study of Usage, C. C. Fries of the Un versity of Michigan declared that o standing scholars of the English langua repudiate the point of view which a sumes as the measure of correct Engli traditional eighteenth century rules grammar. "Usage," he said, "is t basis of all the correctness there can po sibly be in language."